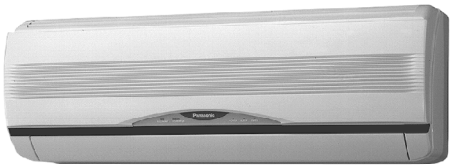
Order No. MAC0109053C0

Service Manual

Room Air Conditioner

CS-A7BKP CU-A7BKP5 / CS-A7BKP CU-A7BKP6 / CS-A9BKP CU-A9BKP5 / CS-A9BKP CU-A9BKP6 / CS-A12BKP CU-A12BKP5 / CS-A12BKP CU-A12BKP6



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⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public.
It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product.
Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic

⚠ PRECAUTION OF LOW TEMPERATURE

In order to avoid frostbite, be assured of no refrigerant leakage during the installation or repairing of refrigeration circuit.

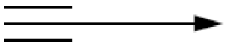
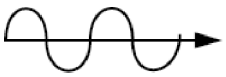
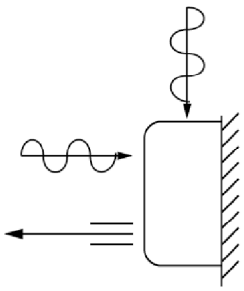
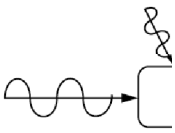
1. Features

- High Efficiency

- Compact Design
- Comfort Environment
- 8 hours of sleep mode operation
- Air filter with function to reduce dust and smoke
- Wider range of horizontal discharge air
- Auto Restart
- Random auto restart after power failure for safety restart operation
- Removable and Washable Front Panel
- Remote Control Self-illuminating Button
- Catechin Air Purifying Filter
- Trap dust, tobacco smoke and tiny particles
- Prevent the growth of bacteria and viruses trapped
- Solar Refreshing Deodorizing Filter
- Remove unpleasant odour from the air
- Quality Improvement
- Gas leakage protection
- Prevent compressor reverse cycle
- 2-stage OLP to protect compressor
- Noise prevention during soft dry operation.
- Anti-dew Formation Control (Cooling & Soft Dry)
- Compressor Protection Control (Cooling & Soft Dry)
- Overload Protection Control (Heating)
- Outdoor Fan Control
- Compressor High Pressure Control
- Blue Coated Condenser
- High resistance to corrosion.
- Operation Improvement
- Economy mode to reduce electrical power consumption
- Powerful mode to reach the desired room temperature quickly
- Long Installation Piping
- CS/CU-A7BK, CS/CU-A9BK, long piping up to 10 meter
- CS/CU-A12BK, long piping up to 15 meter
- 24-hour Timer Setting

2. Functions

3. Product Specifications

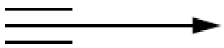
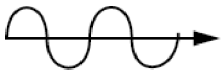
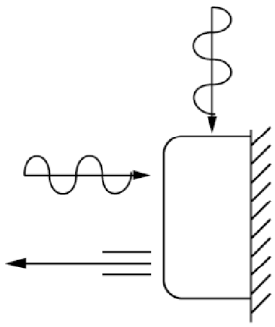
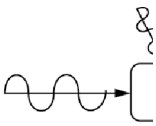
		Unit		CS-A7BK	CU-A7
Power Source		Phase, Voltage, Cycle	(1) (4)	Single, 220 - 230, 50 Hz	
			(2)	Single, 220 - 240, 50 Hz	
Cooling Capacity		kW (kcal/h)	(1) (4)	2.00 - 2.05 (1,720 - 1,760)	
		kW (BTU/h)	(2)	2.00 - 2.05 (6,820 - 6,990)	
Heating Capacity		kW (kcal/h)	(1) (4)	2.20 - 2.25 (1,890 - 1,940)	
		kW (BTU/h)	(2)	2.20 - 2.20 (7,500 - 7,500)	
Moisture Removal		l/h (Pint/h)		1.3 (2.7)	
Airflow Method		OUTLET  INTAKE 		SIDE VIEW 	TOP VI 
Air Volume	Indoor Air (Lo)	m3/min (cfm)		Cooling; 6.4 (230) - 6.4 (230) Heating; 7.0 (250) - 7.0 (250)	—
	Indoor Air (Me)	m3/min (cfm)		Cooling; 7.6 (270) - 7.6 (270) Heating; 7.7 (270) - 7.7 (270)	—
	Indoor Air (Hi)	m3/min (cfm)		Cooling; 8.5 (300) - 8.5 (300) Heating; 9.9 (350) - 9.9 (350)	—
	Indoor Air (SHi)	m3/min (cfm)		Cooling; 9.9 (350) - 9.9 (350) Heating; 9.9 (350) - 9.9 (350)	—

Noise Level		dB (A)	Cooling; High 33-33, Low 26-26 Heating; High 36-36, Low 28-28		Cooling; Hig Heating; Hig
		Power level dB	Cooling; High 46 - 46 Heating; High 47 - 47		Cooling; Hig Heating; Hig
Electrical Data	Input Power	W	(1) (4)	Cooling; 580 - 600 Heating, 500 - 525	
			(2)	Cooling; 580 - 630, Heating, 510	
	Running Current	A	(1) (2) (4)	Cooling; 2.7 - 2.7, Heating; 2.4	
	EER	W/W (kcal/hW)	(1) (4)	Cooling; 3.45 - 3.42 (2.97 - 2.9	
		W/W (BTU/hW)	(2)	Cooling; 3.44 - 3.25 (11.8 - 11	
	COP	W/W (kcal/hW)	(1) (4)	Heating; 4.40 - 4.29 (3.78 - 3.7	
		W/W (BTU/hW)	(2)	Heating; 4.31 - 4.00 (14.7 - 13	
	Starting Current	A	12.4		
Piping Connection Port (Flare piping)		inch inch	G ; Half Union 3/8” L ; Half Union 1/4”		G ; 3-way va L ; 2-way va
Pipe Size (Flare piping)		inch inch	G ; (gas side) 3/8” L ; (liquid side) 1/4”		G ; (gas sid L ; (liquid si
Drain	Inner diameter	mm	12		—
Hose	Length	mm	650		—
Power Cord	Length	m	1.9		—
	Power of core wire		3 (1.0 mm2)		—
Dimensions	Height	inch (mm)	10 - 13/16 (275)		21 - 1/4 (
	Width	inch (mm)	31 - 15/32 (799)		30 - 23/32
	Depth	inch (mm)	8 - 9/32 (210)		11 - 3/8 (
Net Weight		lb (kg)	20 (9.0)		64 (29
Compressor	Type		—		Rotary (1 c rolling pist
	Motor Type		—		Induction (2
	Rated Output	W	—		550

Air Circulation		Type		Cross-flow Fan	Propelle
		Material		AS + Glass Fiber 20%	PP Re
	Motor	Type		Induction (4-poles)	Induction (6
		Input	W	44.8 - 53.5	57.0 - 6
	Rate	Output	W	15	29
	Fan Speed	Low	rpm	Cooling; 780 - 780 Heating; 840 - 840	—
		Medium	rpm	Cooling; 920 - 920 Heating; 920 - 920	—
		High	rpm	Cooling; 1,030 - 1,030 Heating; 1,190 - 1,190	805 - 8
		SuperHigh	rpm	Cooling; 1,190 - 1,190 Heating; 1,190 - 1,190	—
Heat Exchanger	Description			Evaporator	Conder
	Tube material			Copper	Copp
	Fin material			Aluminium (Pre Coat)	Aluminium (E
	Fin Type			Slit Fin	Corrugat
	Row / Stage			(Plate fin configuration, forced dra	
				2 × 15	1 × 2
	FPI			19	17
	Size (W × H × L)		mm	610 × 315 × 25.4	841 × 508
Refrigerant Control Device				—	Capillary
Refrigeration Oil			(cm3)	—	SUNISO 4G ATMOS M6
Refrigerant (R-22)			g (oz)	—	810 (28
Thermostat				Electronic Control	—
Protection Device				—	Overload P
Capillary Tube	Length		mm	—	Cooling; 600, 650
	Flow Rate		l/min	—	Cooling; 5.0, 11.4
	Inner Diameter		mm	—	Cooling; 1.1, 1.5
Air Filter	Material Style			P.P. Honeycomb	—
Capacity Control				Capillary Tube	
Compressor Capacitor			μF, VAC	—	20 μF, 3
Fan Motor Capacitor			μF, VAC	1.5 μF, 400VAC	2.0 μF, 4

Note:

- **Specifications are subject to change without notice for further improvement.**
- **(1) — CS-A7BKP/CU-A7BKP5 (Europe).**
- **(2) — CS-A7BKP-2/CU-A7BKP5-2 (Oceania).**
- **(4) — CS-A7BKP-6/CU-A7BKP5-6 (Turkey).**

	Unit		CS-A9BK	CU-A9
Power Source	Phase, Voltage, Cycle	(1) (4)	Single, 220 - 230, 50 Hz	
		(2)	Single, 220 - 240, 50 Hz	
		(3)	Single, 220, 50 Hz	
Cooling Capacity	kW (kcal/h)	(1) (4)	2.65 - 2.70 (2,280 - 2,320)	
	kW (BTU/h)	(2)	2.65 - 2.65 (9,040 - 9,040)	
	kW (kcal/h)	(3)	2.65 (2,280)	
Heating Capacity	kW (kcal/h)	(1) (4)	3.00 - 3.05 (2,580 - 2,620)	
	kW (BTU/h)	(2)	3.00 - 3.05 (10,230 - 10,400)	
	kW (kcal/h)	(3)	3.00 (2,580)	
Moisture Removal	l/h (Pint/h)		1.6 (3.4)	
Airflow Method	OUTLET  INTAKE 		SIDE VIEW 	TOP V 

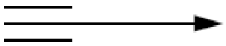
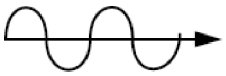
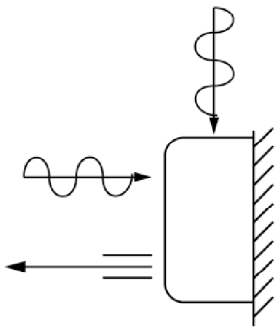
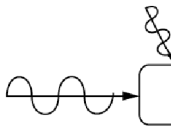
Air Volume	**Indoor Air (Lo)**	**m3/min (cfm)**	**(1) (2) (4)**	**Cooling; 6.8 (240) - 6.8 (240) Heating; 7.0 (250) - 7.0 (250)**	**—**
			(3)	**Cooling; 6.8 (240) Heating; 7.0 (250)**	**—**
	Indoor Air (Me)	**m3/min (cfm)**	**(1) (2) (4)**	**Cooling; 8.3 (290) - 8.3 (290) Heating; 8.0 (280) - 8.0 (280)**	**—**
			(3)	**Cooling; 8.3 (290) Heating; 8.0 (280)**	**—**
	Indoor Air (Hi)	**m3/min (cfm)**	**(1) (2) (4)**	**Cooling; 9.9 (350) - 9.9 (350) Heating; 10.2 (360) - 10.2 (360)**	**—**
			(3)	**Cooling; 9.9 (350) Heating; 10.2 (360)**	**—**
	Indoor Air (SHi)	**m3/min (cfm)**	**(1) (2) (4)**	**Cooling; 10.2 (360) - 10.2 (360) Heating; 10.2 (360) - 10.2 (360)**	**—**
			(3)	**Cooling; 10.2 (360) Heating; 10.2 (360)**	**—**
Noise Level		**dB (A)**	**(1) (2) (4)**	**Cooling; High 36-36, Low 26-26 Heating; High 38-38, Low 28-28**	**Cooling; Hig Heating; Hi**
			(3)	**Cooling; High 36, Low 26 Heating; High 38, Low 28**	**Cooling; I Heating;**
		Power level (dB)	**(1) (2) (4)**	**Cooling; High 49 - 49 Heating; High 49 - 49**	**Cooling; Hig Heating; Hi**
			(3)	**Cooling; High 49 Heating; High 49**	**Cooling; I Heating;**

Electrical Data	Input Power		W	(1) (4)	Cooling; 800 - 830 Heating; 700 - 740	
				(2)	Cooling; 830 - 870, Heating; 730 -	
				(3)	Cooling; 800, Heating; 700	
	Running Current		A	(1) (4)	Cooling; 3.8 - 3.7 Heating; 3.3 - 3.3	
				(2)	Cooling; 3.8 - 3.7, Heating; 3.4 -	
				(3)	Cooling; 3.8, Heating; 3.3	
	EER		W/W (kcal/hW)	(1) (4)	Cooling; 3.31 - 3.25 (2.85 - 2.8(	
			W/W (BTU/hW)	(2)	Cooling; 3.19 - 3.05 (10.9 - 10.4	
			W/W (kcal/hW)	(3)	Cooling; 3.31 (2.85)	
	COP		W/W (kcal/hW)	(1) (4)	Heating; 4.29 - 4.12 (3.69 - 3.54	
			W/W (BTU/hW)	(2)	Heating; 4.11 - 3.91 (14.0 - 13.3	
			W/W (kcal/hW)	(3)	Heating; 4.29 (3.69)	
	Starting Current		A	18.0		
Piping Connection Port (Flare piping)			inch inch	G ; Half Union 3/8” L ; Half Union 1/4”		G ; 3-way v L ; 2-way v
Pipe Size (Flare piping)			inch inch	G ; (gas side) 3/8” L ; (liquid side) 1/4”		G ; (gas si L ; (liquid s
Drain Hose	Inner diameter		mm	12		—
	Length		mm	650		—
Power Cord	Length		m	1.9		—
	Number of core-wire			(1) (2) (4)	3 (1.0 mm^2)	—
				(3)	3 (1.5 mm^2)	—
Dimensions	Height		inch (mm)	10 - 13/16 (275)		21 - 1/4
	Width		inch (mm)	31 - 15/32 (799)		30 - 23/3
	Depth		inch (mm)	8 - 9/32 (210)		11 - 3/8
Net Weight			lb (kg)	20 (9.0)		73 (3
Compressor		Type		—		Rotary (1 (rolling pis
	Motor	Type		—		Induction (
	Rated	Output	W	—		75(
Air Circulation		Type		Cross-flow Fan		Propelle
		Material		AS + Glass Fiber 20%		PP Re
	Motor	Type		Induction (4-poles)		Induction (
		Input	W	44.8 - 53.5		57.0 -
	Rate	Output	W	15		29

	Fan Speed	Low	rpm	(1) (2) (4)	Cooling; 780 - 780 Heating; 840 - 840	—
				(3)	Cooling; 780, Heating; 840	—
		Medium	rpm	(1) (2) (4)	Cooling; 960 - 960 Heating; 960 - 960	—
				(3)	Cooling; 960, Heating; 960	—
		High	rpm	(1) (2) (4)	Cooling; 1,140 - 1,140 Heating; 1,230 - 1,230	805 -
				(3)	Cooling; 1,140, Heating; 1,230	80
		SuperHigh	rpm	(1) (2) (4)	Cooling; 1,230 - 1,230 Heating; 1,230 - 1,230	—
				(3)	Cooling; 1,230, Heating; 1,230	—
Heat Exchanger	Description			Evaporator		Conde
	Tube material			Copper		Copp
	Fin material			Aluminium (Pre Coat)		Aluminium (
	Fin Type			Slit Fin		Corruga
	Row / Stage			(Plate fin configuration, forced draf		
				2 × 15		1 ×
	FPI			19		17
	Size (W × H × L)		mm	610 × 315 × 25.4		841 × 50
Refrigerant Control Device				—		Capillary
Refrigeration Oil			(cm^3)	—		SUNISO 4 ATMOS M
Refrigerant (R-22)			g (oz)	—		920 (3
Thermostat				Electronic Control		—
Protection Device				—		Overload F
Capillary Tube	Length		mm	—		Cooling; 982 32
	Flow Rate		l/min	—		Cooling; 5.4 13.
	Inner Diameter		mm	—		Cooling; 1.2 1.4
Air Filter	Material Style			P.P. Honeycomb		—
Capacity Control				Capillary Tube		
Compressor Capacitor			μF, VAC	—		30 μF,
Fan Motor Capacitor			μF, VAC	1.5 μF, 400VAC		2.0 μF,

Note:

- **Specifications are subject to change without notice for further improvement.**
- **(1) — CS-A9BKP/CU-A9BKP5 (Europe).**
- **(2) — CS-A9BKP-2/CU-A9BKP5-2 (Oceania).**
- **(3) — CS-A9BKP-3/CU-A9BKP5-3 (Argentina).**
- **(4) — CS-A9BKP-6/CU-A9BKP5-6 (Turkey).**

	Unit		CS-A12BK	CU-A12
Power Source	Phase, Voltage, Cycle	(1) (4)	Single, 220 - 230, 50 Hz	
		(2)	Single, 220 - 240, 50 Hz	
		(3)	Single, 220, 50 Hz	
Cooling Capacity	kW (kcal/h)	(1) (4)	3.52 - 3.60 (3,030 - 3,100)	
	kW (BTU/h)	(2)	3.52 - 3.57 (12,000 - 12,170)	
	kW (kcal/h)	(3)	3.52 (3,030)	
Heating Capacity	kW (kcal/h)	(1) (4)	3.90 - 4.07 (3,350 - 3,500)	
	kW (BTU/h)	(2)	3.90 - 4.00 (13,300 - 13,640)	
	kW (kcal/h)	(3)	3.90 (3,350)	
Moisture Removal	l/h (Pint/h)		2.1 (4.4)	
Airflow Method	OUTLET  INTAKE 		SIDE VIEW 	TOP VI 

Air Volume	**Indoor Air (Lo)**	**m3/min (cfm)**	**(1) (2) (4)**	**Cooling; 7.3 (260) - 7.3 (260) Heating; 7.8 (270) - 7.8 (270)**	**—**
			(3)	**Cooling; 7.3 (260) Heating; 7.8 (270)**	**—**
	Indoor Air (Me)	**m3/min (cfm)**	**(1) (2) (4)**	**Cooling; 9.1 (320) - 9.1 (320) Heating; 9.1 (320) - 9.1 (320)**	**—**
			(3)	**Cooling; 9.1 (320) Heating; 9.1 (320)**	**—**
	Indoor Air (Hi)	**m3/min (cfm)**	**(1) (2) (4)**	**Cooling; 10.2 (360) - 10.2 (360) Heating; 10.6 (370) - 10.6 (370)**	**—**
			(3)	**Cooling; 10.2 (360) Heating; 10.6 (370)**	**—**
	Indoor Air (SHi)	**m3/min (cfm)**	**(1) (2) (4)**	**Cooling; 10.6 (370) - 10.6 (370) Heating; 10.6 (370) - 10.6 (370)**	**—**
			(3)	**Cooling; 10.6 (370) Heating; 10.6 (370)**	**—**
Noise Level		**dB (A)**	**(1) (2) (4)**	**Cooling; High 39-39, Low 29-29 Heating; High 40-40, Low 29-29**	**Cooling; Hig Heating; Hig**
			(3)	**Cooling; High 39, Low 29 Heating; High 40, Low 29**	**Cooling; H Heating; H**
		Power level (dB)	**(1) (2) (4)**	**Cooling; High 52 - 52 Heating; High 52 - 52**	**Cooling; Hig Heating; Hig**
			(3)	**Cooling; High 52 Heating; High 52**	**Cooling; H Heating; H**

Electrical Data	Input Power	kW	(1) (4)	Cooling; 1.08 - 1.12 Heating; 1.07 - 1.10	
			(2)	Cooling; 1.12 - 1.17, Heating; 1.07 -	
			(3)	Cooling; 1.08, Heating; 1.07	
	Running Current	A	(1) (4)	Cooling; 5.1 - 5.0 Heating; 5.0 - 4.8	
			(2)	Cooling; 5.1 - 4.9, Heating; 5.0 - 4	
			(3)	Cooling; 5.1, Heating; 5.0	
	EER	W/W (kcal/hW)	(1) (4)	Cooling; 3.26 - 3.21 (2.80 - 2.77)	
		W/W (BTU/hW)	(2)	Cooling; 3.14 - 3.05 (10.7 - 10.4)	
		W/W (kcal/hW)	(3)	Cooling; 3.26 (2.80)	
	COP	W/W (kcal//hW)	(1) (4)	Heating; 3.64 - 3.70 (3.13 - 3.18)	
		W/W (BTU/hW)	(2)	Heating; 3.48 - 3.60 (11.9 - 12.3)	
		W/W (kcal/hW)	(3)	Heating; 3.64 (3.13)	
	Starting Current	A	16.9		
Piping Connection Port (Flare piping)		inch inch	G ; Half Union 1/2” L ; Half Union 1/4”		G ; 3-way va L ; 2-way va
Pipe Size (Flare piping)		inch inch	G ; (gas side) 1/2” L ; (liquid side) 1/4”		G ; (gas si L ; (liquid s
Drain Hose	Inner diameter	mm	12		—
	Length	mm	650		—
Power Cord	Length	m	1.9		—
	Number of core-wire		(1) (2) (4)	3 (1.0 mm^2)	—
			(3)	3 (1.5 mm^2)	—
Dimensions	Height	inch (mm)	10 - 13/16 (275)		21 - 1/4 (
	Width	inch (mm)	31 - 15/32 (799)		30 - 23/32
	Depth	inch (mm)	8 - 9/32 (210)		11 - 3/8 (
Net Weight		lb (kg)	20 (9.0)		82 (37
Compressor	Type		—		Rotary (1 c rolling pist
	Motor Type		—		Induction (2
	Rated Output	W	—		930
Air Circulation	Type		Cross-flow Fan		Propelle
	Material		AS + Glass Fiber 20%		PP Re
	Motor Type		Induction (4-poles)		Induction (
	Input	W	44.8 - 53.5		64.8 - 7
	Rate Output	W	15		33

	Fan Speed	Low	rpm	(1) (2) (4)	Cooling; 900 -900 Heating; 960 - 960	—
				(3)	Cooling; 900, Heating; 960	—
		Medium	rpm	(1) (2) (4)	Cooling; 1,120 - 1,120 Heating; 1,120 - 1,120	—
				(3)	Cooling; 1,120, Heating; 1,120	—
		High	rpm	(1) (2) (4)	Cooling; 1,260 - 1,260 Heating; 1,300 - 1,300	835 - 8
				(3)	Cooling; 1,260, Heating; 1,300	835 - 8
		SuperHigh	rpm	(1) (2) (4)	Cooling; 1,300 - 1,300 Heating; 1,300 - 1,300	—
				(3)	Cooling; 1,300, Heating; 1,300	—
Heat Exchanger	Description			Evaporator		Conder
	Tube material			Copper		Copp
	Fin material			Aluminium (Pre Coat)		Aluminium (E
	Fin Type			Slit Fin		Corrugat
	Row / Stage			(Plate fin configuration, forced draft 2 × 15		2 × 2
	FPI			21		17
	Size (W × H × L)		mm	610 × 315 × 25.4		705.8 × 735.1 1
Refrigerant Control Device				—		Capillary
Refrigeration Oil			(cm3)	—		SUNISO 4G
Refrigerant (R-22)			g (oz)	—		1,090 (3
Thermostat				Electronic Control		—
Protection Device				—		Overload P
Capillary Tube	Length		mm	—		Cooling; 630, 455
	Flow Rate		l/min	—		Cooling; 6.5, 13.6
	Inner Diameter		mm	—		Cooling; 1.2, 1.5
Air Filter	Material Style			P.P. Honeycomb		—
Capacity Control				Capillary Tube		
Compressor Capacitor			μ F, VAC	—		30 μ F, 3
Fan Motor Capacitor			μ F, VAC	1.5 μ F, 400VAC		2.0 μ F, 4

Note:

- Specifications are subject to change without notice for further improvement.

- (1) — CS-A12BKP/CU-A12BKP5 (Europe).

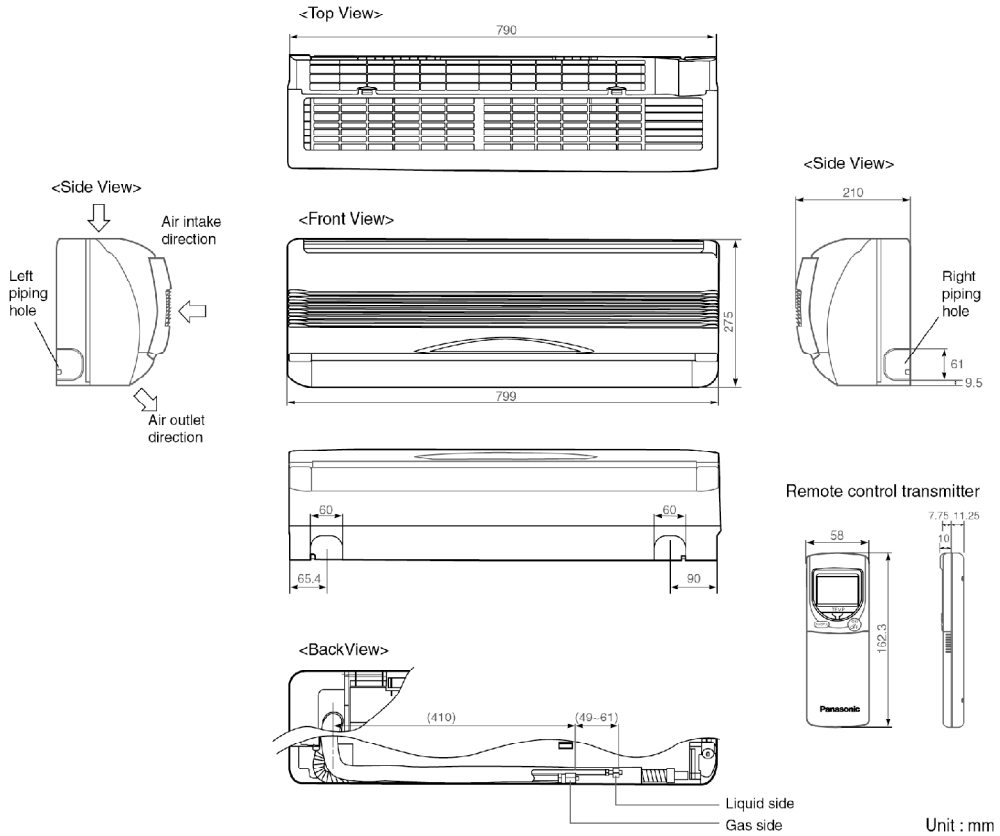
- (2) — CS-A12BKP-2/CU-A12BKP5-2 (Oceania).

- (3) — CS-A12BKP-3/CU-A12BKP5-3 (Argentina).

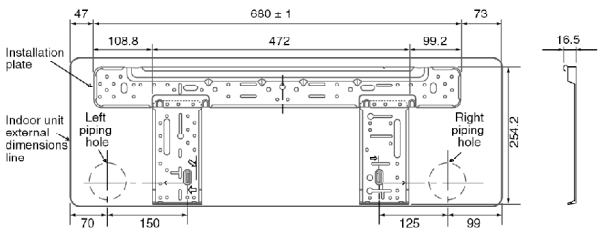
- (4) — CS-A12BKP-6/CU-A12BKP5-6 (Turkey).

4. Dimensions

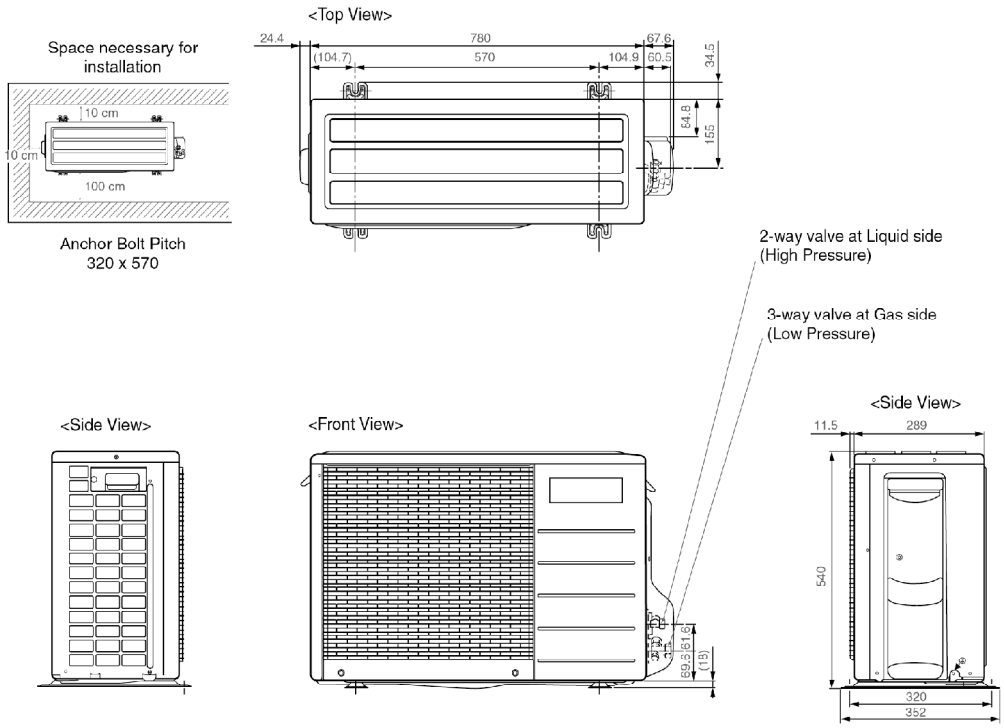
CS-A7BK / CS-A9BK / CS-A12BK



Relative position between the indoor unit and the installation plate <Front View>

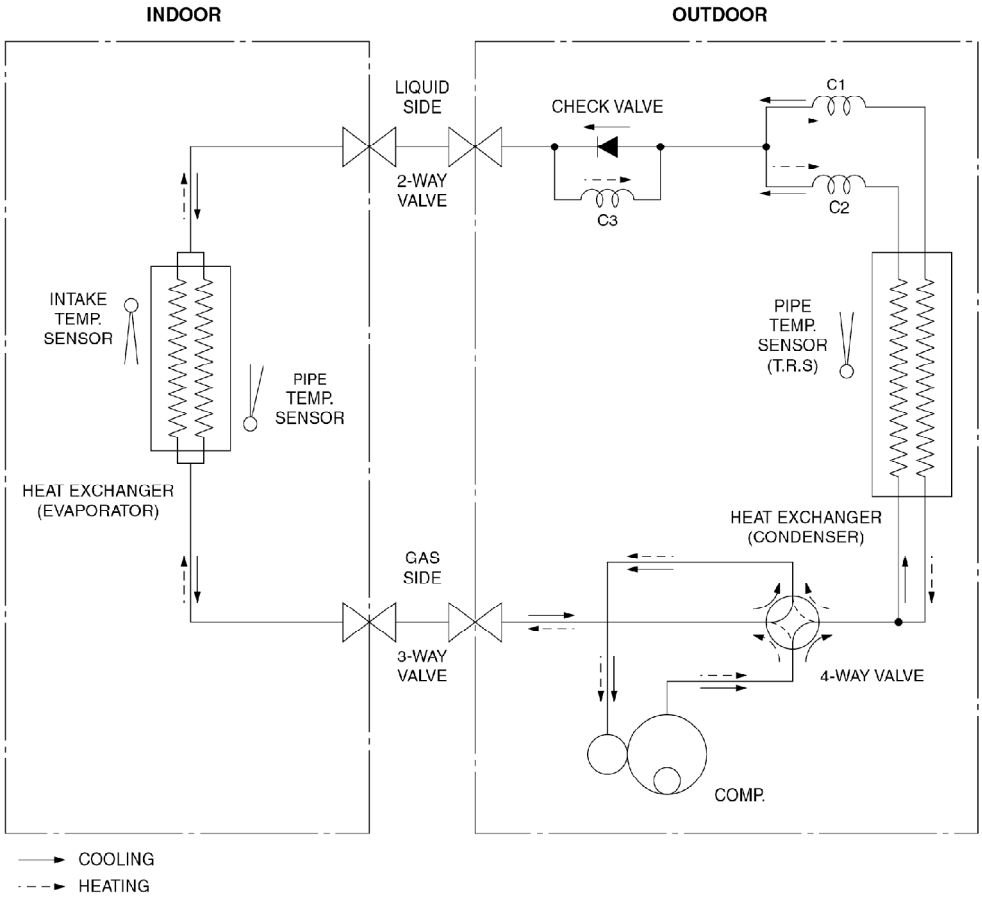


CU-A7BK / CU-A9BK / CU-A12BK



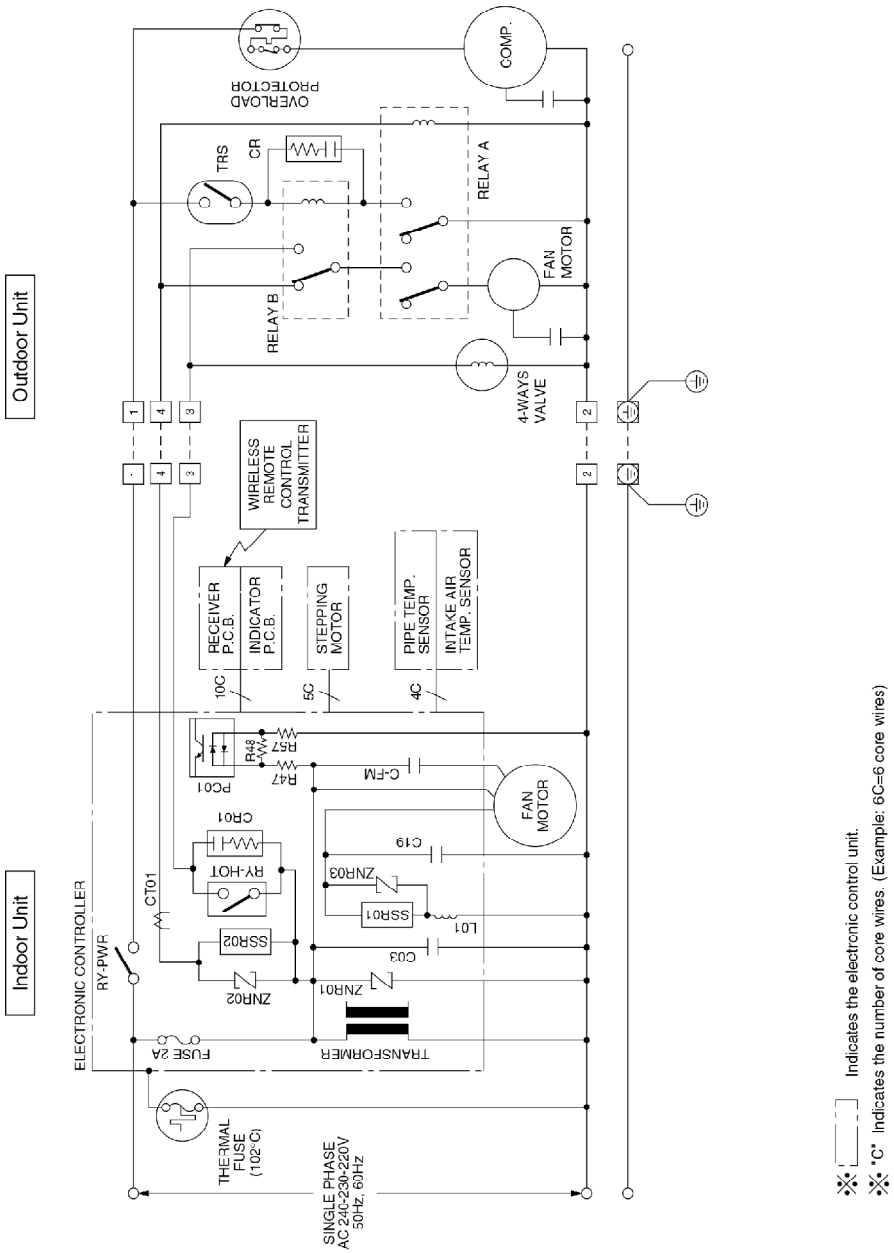
5. Refrigeration Cycle Diagram

CS-A7BK / CU-A7BK
CS-A9BK / CU-A9BK
CS-A12BK / CU-A12BK



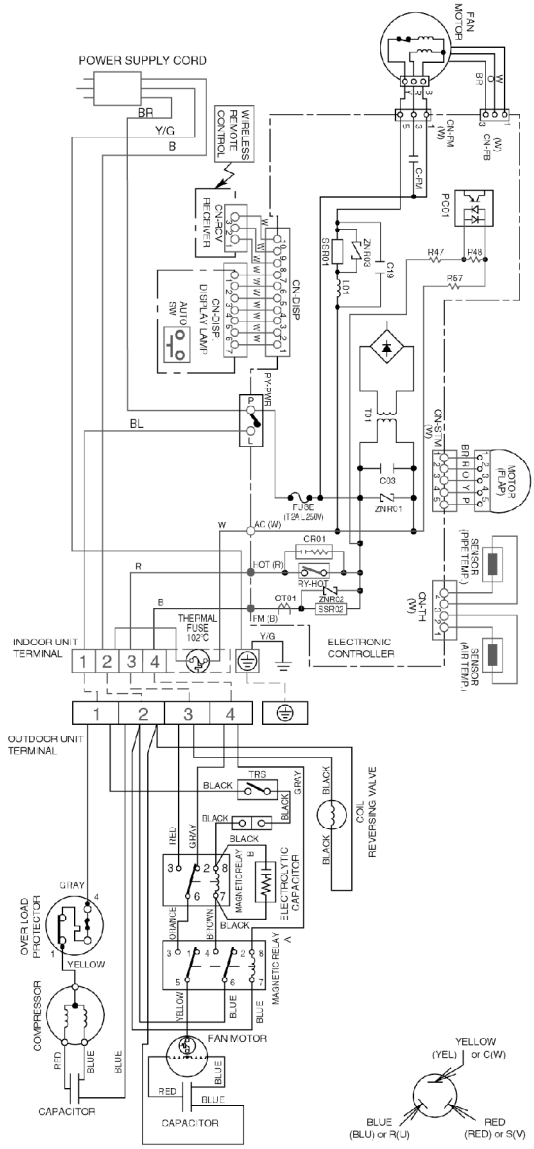
6. Block Diagram

CS-A7BK / CU-A7BK
CS-A9BK / CU-A9BK
CS-A12BK / CU-A12BK



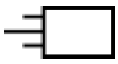
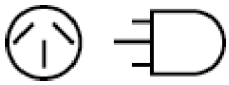
7. Wiring Diagram

CS-A7BK / CU-A7BK
CS-A9BK / CU-A9BK
CS-A12BK / CU-A12BK



REMARKS

B	**: BLUE**
BR	**: BROWN**
BL	**: BLACK**
GRY	**: GRAY**
O	**: ORANGE**
P	**: PINK**
R	**: RED**
W	**: WHITE**
Y/G	**: YELLOW/GREEN**

Power Supply Cord	Destination
	-Europe -Oceania -Turkey
	-Argentina

Resistance of Indoor Fan Motor Windings

MODEL	CS-A7BK CS-A9BK CS-A12BK
CONNECTION	CWA921060
BLUE-YELLOW	371.0 Ω
YELLOW-RED	386.6 Ω

Resistance of Outdoor Fan Motor Windings

MODEL	CU-A7BK CU-A9BK	CU-A12BK
CONNECTION	CWA951087	CWA951117
BLUE-YELLOW	249.8 Ω	230.0 Ω
YELLOW-RED	288.6 Ω	255.0 Ω

Resistance of Compressor Windings

MODEL	CU-A7BK
CONNECTION	2RS122D5BC02
C-R	5.193 Ω
C-S	5.557 Ω

MODEL	CU-A9BK
CONNECTION	2PS156D3BA02
C-R	3.501 Ω
C-S	3.405 Ω

MODEL	CU-A12BK
CONNECTION	QJ208PAA
C-R(Main)	3.31 Ω
C-S(Sub)	4.72 Ω

8. Operation Details

8.1. Cooling Mode Operation

Cooling in operation according to Remote Control setting.

Time Delay Safety Control (3 minutes)

- When the compressor is stopped by Remote Control, it restarts after 3 minutes when it is turned ON by Remote Control.
- When the setting temperature is reached during cooling operation, the compressor stops and it will not start for 3 minutes.

7 minutes Time Save Control

- The compressor will start automatically if it has stopped for 7 minutes even if the room temperature is between the compressor ON temperature and OFF temperature.

Starting Current Control

- When the compressor outdoor fan motor and indoor fan motor are simultaneously started, the indoor fan motor will operate 1.6 second later.

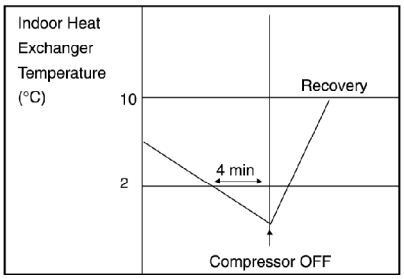
Anti-Freezing Control

- If the temperature of the indoor heat exchanger falls continuously below 2°C for 4 minutes or more, the compressor turns off to

protect the indoor heat exchanger from freezing. The fan speed setting remains the same.

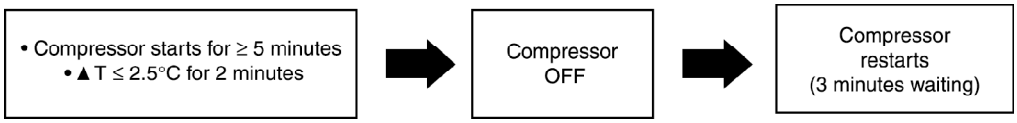
- Compressor will restart again when the indoor heat exchanger temperature rises to 10°C (Recovery).

※ 3 minutes waiting of Time Delay Safety Control is valid for Cooling Operation.



Compressor Reverse Rotation Protection Control

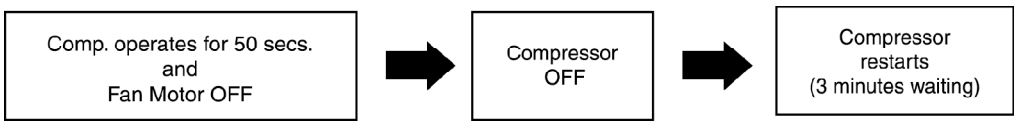
- If the compressor is operating continuously for 5 minutes or longer and the temperature difference between intake air and indoor heat exchanger is 2.5°C or less for 2 minutes, compressor will stop and restart automatically. / (Time Delay Safety Control is valid)



▲ T = Intake air temperature - Indoor heat exchanger temperature / This is to protect reverse rotation of the compressor when there is a instantaneous power failure.

Compressor Protection Control

- After the compressor starts for 50 seconds but the outdoor fan motor is still OFF, the compressor will stop and restart automatically. (Time Delay Safety Control is valid).



- If the above phenomenon is repeated for 3 times, the compressor

will stop totally.

- The above phenomenon is reset when there is a change to heating mode or stopped by Remote Control Switch.

Anti-Dew Formation Control

- Purpose is to prevent dew formation on indoor unit air discharge area.

- When the following conditions occur for 30 minutes continuously, anti-dew formation is controlled by indoor fan speed shift to low (CLo to HLo):

- Indoor intake air temperature is more than 24°C and less than 30°C.

- Remote Control setting temperature is less than 25°C.

- Compressor is on.

- Cooling operation mode.

- Indoor Fan motor operate at Low fan speed.

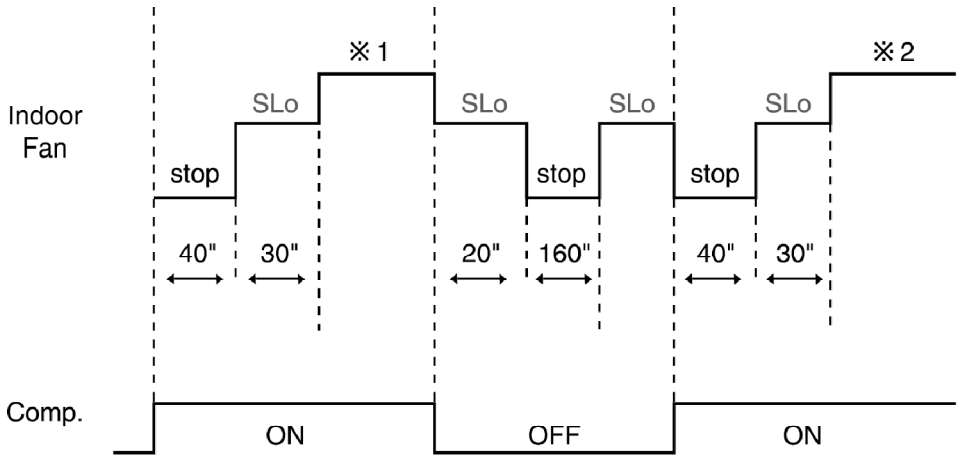
- This control is cancelled immediately when above condition is changed.

Automatic Fan Speed Mode

When Automatic Fan Speed is selected at Remote Control during cooling operation.

- Fan speed rotates in the range of Hi to Me.

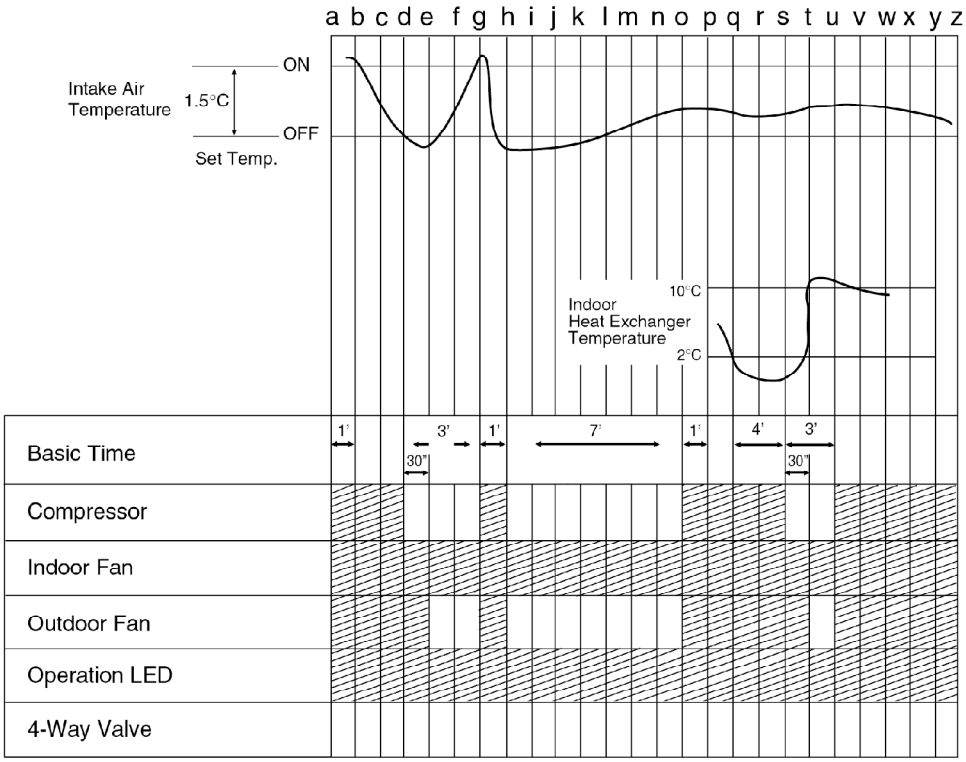
- Deodorizing Control.



※ 1 Fan Speed is Hi until the compressor stops (when the room temperature reaches setting temperature).

※ 2 Fan Speed is Me after the compressor restarts.

Cooling Operation Time Diagram



<Description of operation>

d – g : Time Delay Safety Control (waiting for 3 minutes)
g – h : 60 sec. Forced Operation
h – o : 7 min. Time Save Control
q – u : Anti Freezing Control

Operation

Stop

8.2. Soft Dry Mode Operation

- The unit starts cooling operation until the room temperature reaches the setting temperature set on the Remote Control, and then Soft Dry operation will start.

- During Soft Dry operation, the Indoor Fan will operate at SLo speed.

- The operation will be switched on and off for up to 10 minutes “ON” and 6 minutes “OFF”. Once Soft Dry operation is turned off, it stops for 6 minutes.

Time Delay Safety Control

- Once the compressor stops, it will not start for 3 minutes during Cooling operation.

Starting Current Control

- Same as Starting Current Control for Cooling Mode operation.

Anti-Freezing Control

- Same as Anti-Freezing Control for Cooling Mode operation. (For Soft Dry region, 6 minutes waiting is valid during compressor stops.) /

Compressor Reverse Rotation Protection Control

- Same as Compressor Reverse Rotation Protection Control for Cooling Mode Operation. (For Soft Dry region, 6 minutes waiting is valid during compressor stops.)

Compressor Protection Control

- Same as Compressor Protection Control for Cooling Mode Operation.

Anti-Dew Formation Control

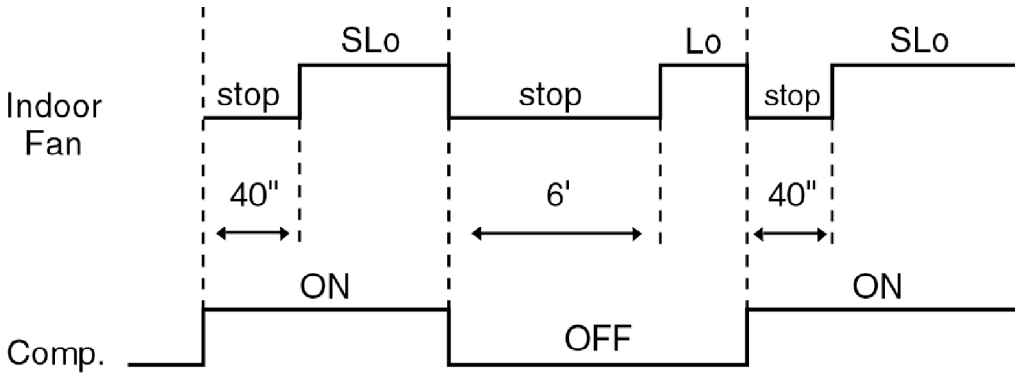
- Same as Anti-Dew Formation Control for Cooling Mode Operation.

Automatic Fan Speed Mode

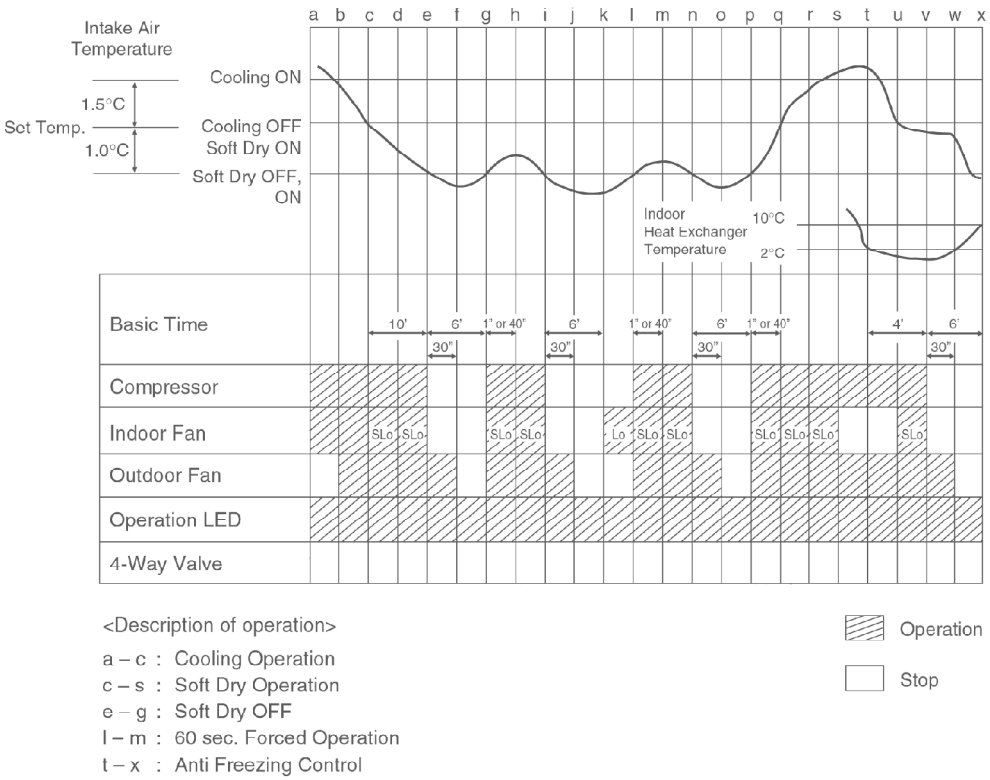
When Automatic Fan Speed is selected at Remote Control during Soft Dry operation.

- Fan speed rotates at SLo speed.

- Deodorizing Control.



Soft Dry Operation Time Diagram



8.3. Heating Mode Operation

Heating in operation according to Remote Control setting.

Time Delay Safety Control

- When the compressor is stopped by Remote Control, it restarts after 3 minutes when the Remote Control is turned ON.

- When the setting temperature is reached during heating operation, the compressor stops and it will not start for 4 minutes. /

30 minutes Time Save Control

- The compressor will start automatically if it has stopped for 30 minutes even if the room temperature is between the compressor ON temperature and OFF temperature.

Overload Protection Control

(a) Outdoor Fan Control

- If the temperature of the indoor heat exchanger rises to 51°C, Outdoor Fan stops.
The Outdoor Fan restarts when the indoor heat exchanger temperature falls to 49°C.

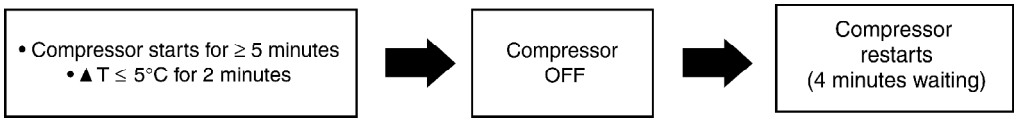
(b) Compressor high pressure protection

- If the indoor heat exchanger becomes 65°C or more, the compressor will stop and restart automatically.
(Time Delay Safety Control - 4 minutes waiting).

Indoor heat exchanger temperature ≥ 65°C
Compressor OFF
Compressor restarts if indoor heat exchanger temperature <65°C (4 minutes waiting)

Compressor Reverse Rotation Protection Control

- If the compressor is operating continuously for 5 minutes or longer and temperature difference between intake air and indoor heat exchanger is 5°C or less for 2 minutes, compressor will stop and restart automatically.
(Time Delay Safety Control is valid).



▲ T = Indoor heat exchanger temperature - intake air temperature. / This is to protect reverse rotation of the compressor when there is a instantaneous power failure.

4-way Valve Control

- 4-way valve always ON during Heating operation. (Except Deicing operation)
- When the unit is switched to "OFF" during Heating operation, 4-way valve stay at Heating position for 5 minutes.

Outdoor Fan Motor Control

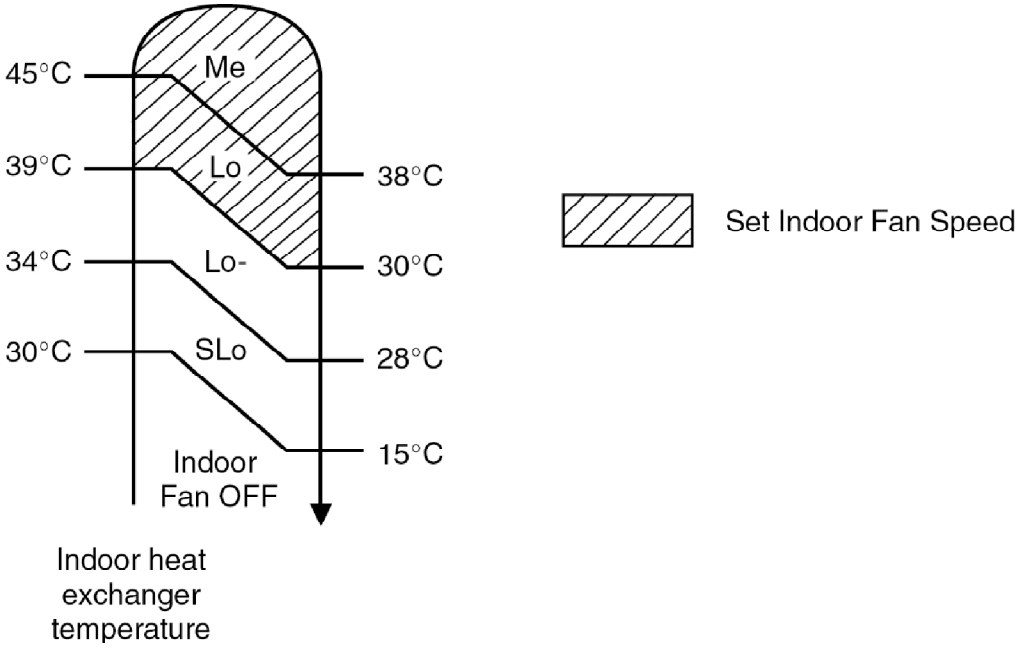
- When compressor stops (reaches room temperature), outdoor fan will operate for 30 seconds.
(30 seconds Forced Operation).

Indoor Fan Motor Control

- When compressor stops (reaches room temperature), indoor fan will stop for 1 minutes, operate for 3 minutes, if still not yet reaches the room temperature, indoor fan Lo- for 40 sec. after that operate at SLo speed.

Hot Start Control

When Heating operation starts, Indoor Fan will not start until the indoor heat exchanger reaches 30°C as diagram shown.



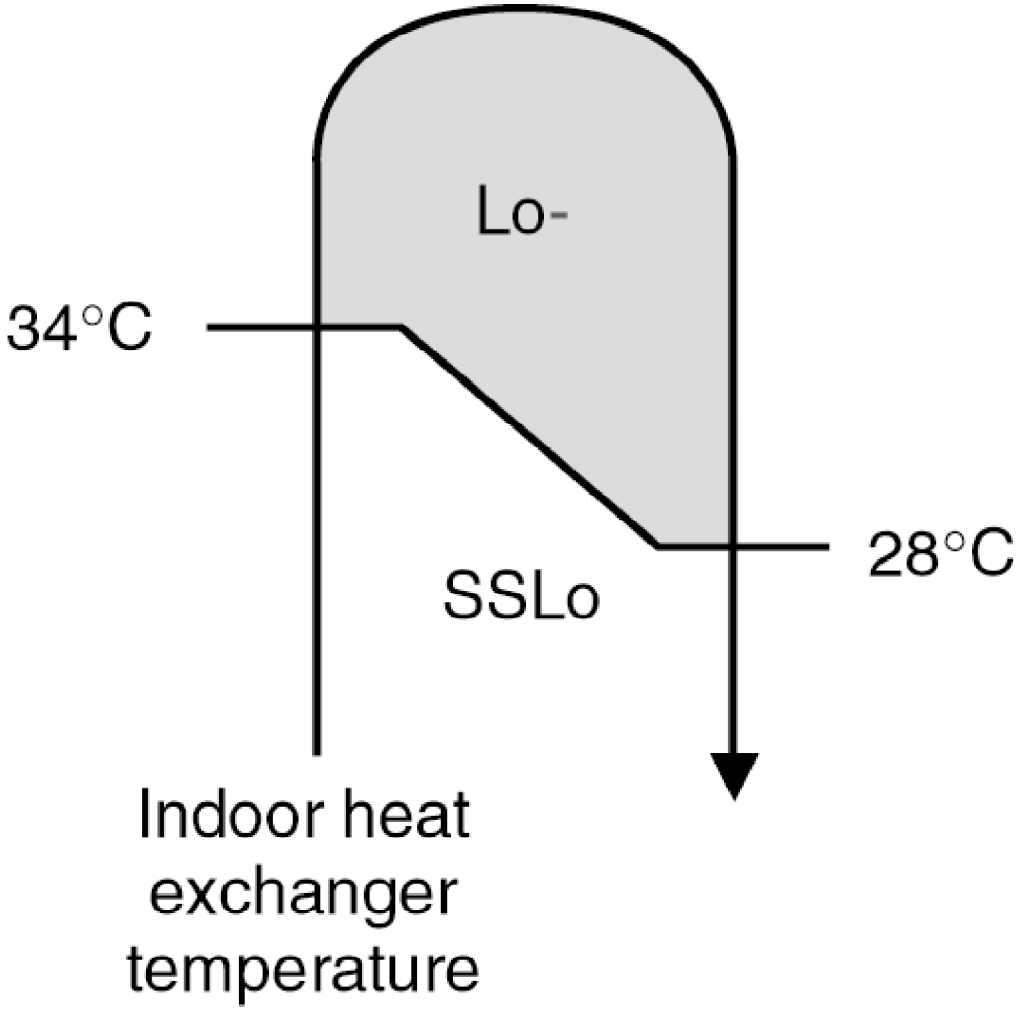
Hot Start is completed when indoor heat exchanger rises to 39°C or over 4 minutes.

Anti Cold Draft Control

- This operation is to prevent the Cold Draft during Heating mode operation.

- The operation will start when compressor OFF (Thermo OFF) during Heating operation.

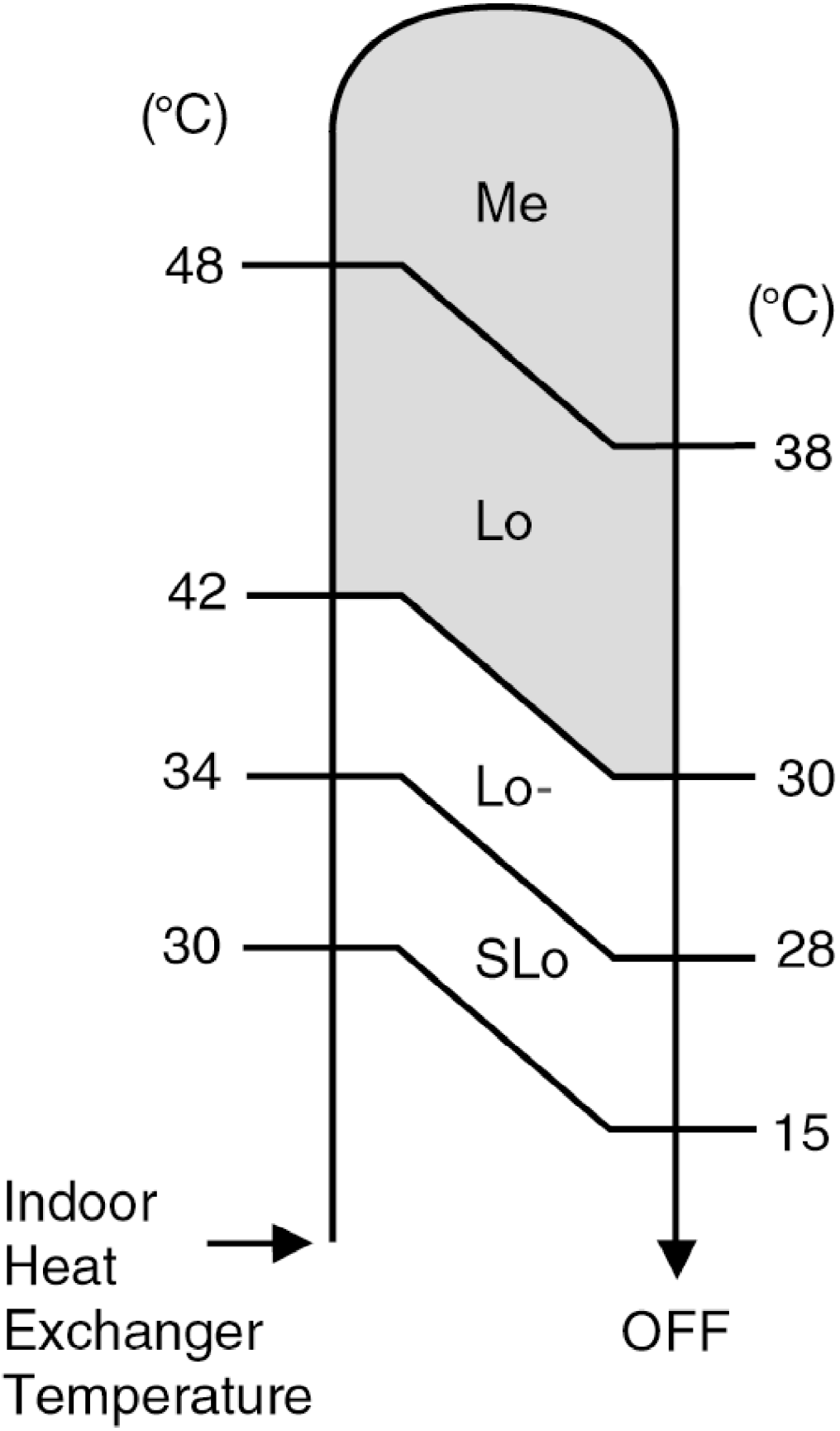
- For the first 30 sec. from compressor OFF (Thermo OFF), Indoor fan speed will operate accordingly to the Indoor heat exchanger temperature as shown below:



- After 30 sec. from compressor OFF (thermo OFF), Indoor fan will run at SSLo speed only.
- Anti Cold Draft Control will stop when:
- Intake temperature < set temperature. (Time Delay Safety Control 4 minutes waiting is valid)
- After 30 minutes time saved control.
(see page 24).

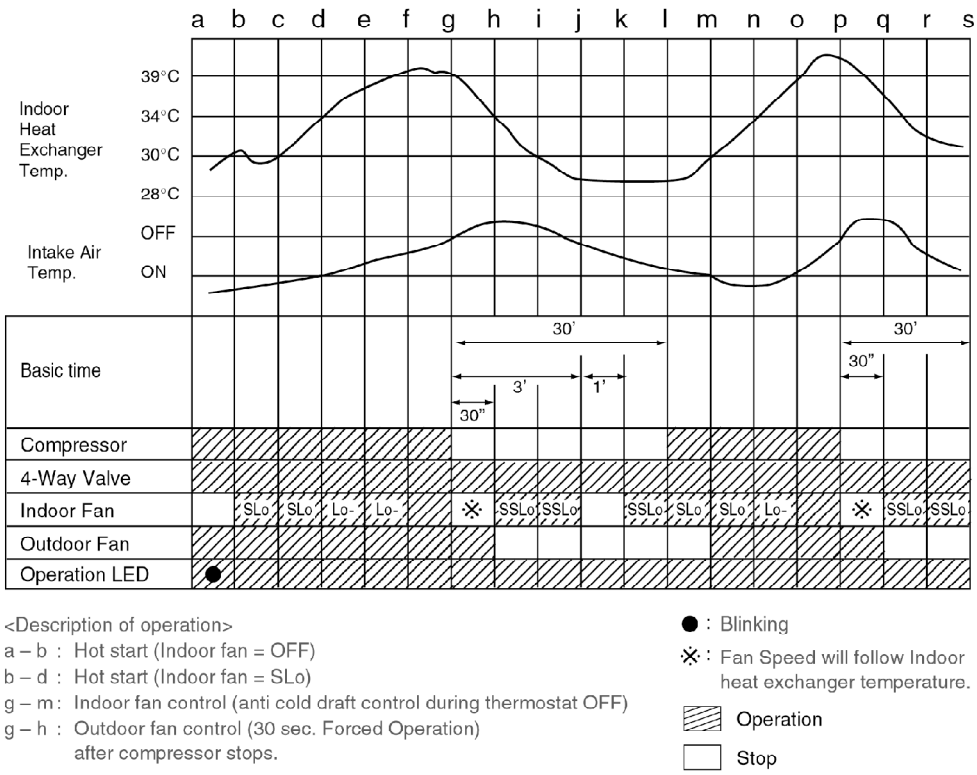
Automatic Fan Speed Mode

When Automatic Fan Speed is selected at Remote Control during heating operation.
- Fan speed rotates in the range of Me → SLo according to the heat exchanger temperature.


(°C)
Me
48
(°C)
38
Lo
42
34
Lo-
30
30
SLo
28
15
Indoor
Heat
Exchanger
Temperature
OFF

- If use Manual Fan Speed, [redacted] at above diagram will operate with setting Fan Speed.

Heating Operating Time Diagram



<Description of operation>
a – b : Hot start (Indoor fan = OFF)
b – d : Hot start (Indoor fan = SLo)
g – m : Indoor fan control (anti cold draft control during thermostat OFF)
g – h : Outdoor fan control (30 sec. Forced Operation) after compressor stops.

● : Blinking
※ : Fan Speed will follow Indoor heat exchanger temperature.
Operation
Stop

Deicing Control

Deice starts to prevent frosting at outdoor heat exchanger.

- Normal Deicing

Deice operations detection commences after 30 minutes of Heating operation starts or 60 minutes after previous deice operation. If the TRS (Thermal Reed Switch) senses the outdoor piping temperature drops to -3°C (TRS CLOSE) or less for 50 sec. continuously during compressor is in operation, deice will start.

(There is no detection during Outdoor Fan stops.)

- Overload Deicing

During heating operation, if the outdoor Fan OFF duration (due to overload control) is accumulated up to 60 minutes and after compressor starts for 1 minutes, deicing starts.

- Deicing ends when

1. 12 minutes after deicing operation starts;

2. TRS senses the outdoor piping temperature rises to 4°C (TRS OPEN).

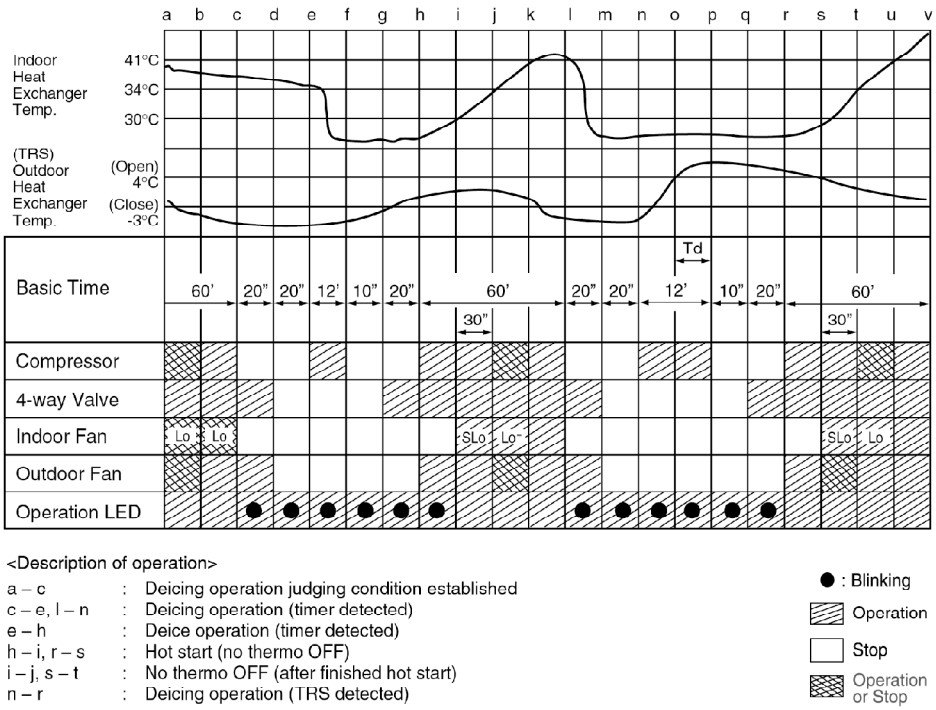
3. Deicing will not end immediately as time delay (Td) is valid as shown below.

Time taken from deicing starts to TRS OPEN (T)	Deice recovery time	Td (seconds)
T ≤ 1 minutes	1 min. wait (Min.)	0
1 minutes < T < 3 minutes	T	0
3 minutes < T < 8 minutes	T + 60 sec.	60
8 minutes < T < 11 minutes	T + 120 sec.	120
T > 11 minutes	12 min wait (Max.)	—

- Once deicing operation starts, it will not end for 60 seconds.

- After deicing operation, compressor stops for 30 seconds and 4-way valve stays at cooling position for 10 seconds.

Normal Deicing Time Diagram

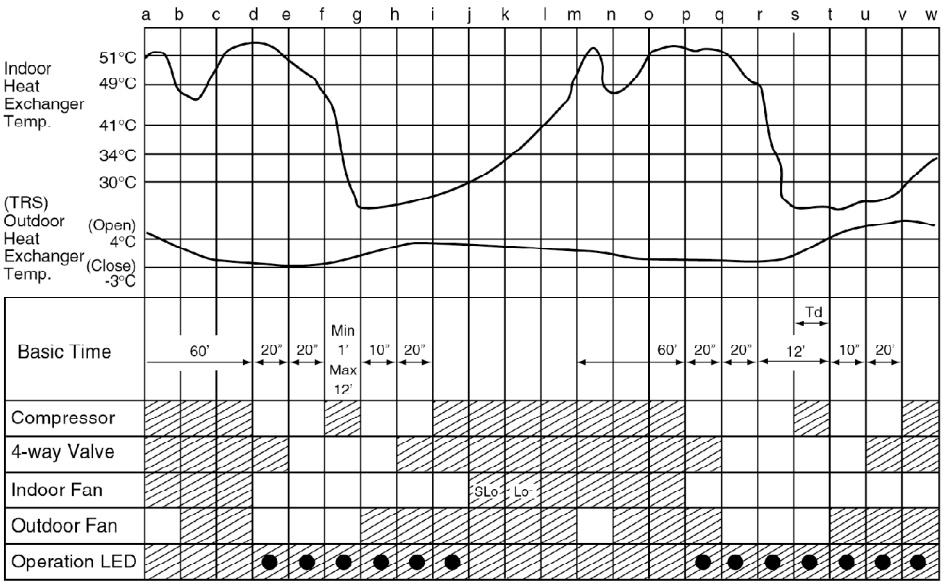


<Description of operation>

a – c	:	Deicing operation judging condition established
c – e, l – n	:	Deicing operation (timer detected)
e – h	:	Deice operation (timer detected)
h – i, r – s	:	Hot start (no thermo OFF)
i – j, s – t	:	No thermo OFF (after finished hot start)
n – r	:	Deicing operation (TRS detected)

● : Blinking
Operation
Stop
Operation or Stop

Overload Deicing Time Diagram



<Description of operation>

a – d, m – p	:	Overload control. (intergrate)
d – f, p – r	:	Preparation time for Deicing
f – i	:	Overload deicing (timer detected)
i – j	:	Hot start (indoor fan OFF)
j – k	:	Hot start (indoor fan SLo)
r – t	:	Overload control (TRS detected)

● : Blinking
Operation
Stop

8.4. Automatic Mode Operation

1. When the Automatic Mode Operation is selected, the indoor fan operates at SLo fan speed for 25 seconds to sense intake air temperature and determine the 1st operation mode.

Standard for Determining Operation Mode
1st Judgement

↑
Intake Air Temperature
23°C
20°C
Cooling Mode
Soft Dry Mode
Heating Mode

Operation Mode	Setting Temperature (Standard)
Cooling	25°C
Soft Dry	22°C
Heating	21°C

2. Operation mode will be determine again after 1 hour of operation, if the room temperature reaches to set temperature and compressor off time is over 7 minutes 30 seconds continuously.

※ The present operation mode will be continued, if the room temperature does not reach to set te (Compressor keeps running) eventhough after 1 hour from automatic operation mode started.

Standard for Determining Operation Mode
2nd Judgement onwards

Present Mode	Judgement	Next Mode		
		Cooling	Soft Dry	Heating
Cooling	23°C Cooling / Heating	O (Judgement: 23°C & Above)	Not Applicable	O (Judgement Below 23°C
Soft Dry	20°C Soft Dry / Heating	Not Applicable	O (Judgement: 20°C & Above)	O (Judgement Below 20°C
Heating	25°C Cooling / Heating	O (Judgement: Above 25°C)	Not Applicable	O (Judgement 25°C & belov

※ Automatic Set Temperature
Refer 3. as below.

3. Automatic Set Temperature

For each operation, set temperature will automatically set as shown below.
However it can be selected 2°C higher or 2°C lower from standard set temperature by pressing the “Room Temperature Setting button”.

Operation	Hi (+2°C)	(Standard) (±0°C)	Lo (-2°C)
Cooling	27°C	25°C	23°C
Soft Dry	24°C	22°C	20°C
Heating	23°C	21°C	19°C

- The mode judging temperature and standard setting temperature can be increased by 2°C, by open the circuit of JX1 at indoor electronic controller.

Operation Mode	Setting Temperature (Standard)
Cooling	27°C
Soft Dry	24°C
Heating	23°C

8.5. Sleep Mode Auto Operation

Cooling or Soft Dry Operation

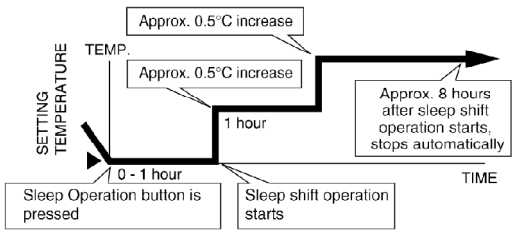
Purpose is to obtain a comfortable room temperature while sleeping. When you press the SLEEP Mode, the following movement will start to avoid overcooling.

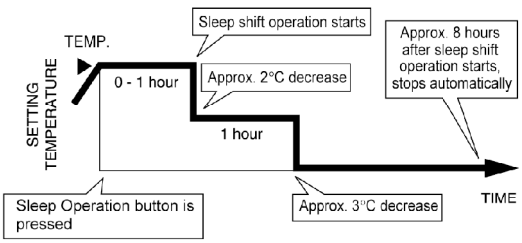
- **Sleep shift operation starts, when the room temperature reaches the setting temperature or after 1 hour of operation.**
- **The setting temperature will be risen by 0.5°C at the start of operation and by 0.5°C one hour later .**
- **The airflow volume will automatically change to Lo fan speed.**
- **Sleep Mode operation time is 8 hours, the operation will be stop after 8 hour.**
- **When used together with the Timer, the Timer has priority.**

Heating Operation

Purpose is to obtain a comfortable room temperature while sleeping. When you press the SLEEP Mode, the following movement will start to avoid overheating.

- **Sleep shift operation starts, when the room temperature reaches the setting temperature or after 1 hour of operation.**
- **The setting temperature will be decrease by 2°C at the start of operation and by 3°C one hour later.**
- **The airflow volume will automatically change to Lo fan speed. The fan speed refer to Indoor Fan Motor Control.**
- **Sleep Mode operation time is 8 hours, the operation will be stop after 8 hour.**
- **When used together with the Timer, the Timer has priority.**





8.6. Random Auto Restart Control

- If there is a power failure, operation will be automatically restarted after 3 to 5 1/2 minutes when the power is resumed. It will start with previous operation mode and airflow direction.
- Restart time is decided randomly using 4 parameter: Intake air temperature, setting temperature, fan speed and Air Swing Blade position.
- Random Auto Restart Control is not available when Timer or Sleep Mode is set.
- This control can be omitted by open the circuit of JX2. (Refer Circuit Diagram)

8.7. Delay ON Timer Control

- When the Delayed ON Timer is set by using the remote control, the unit will start operate slightly before the set time, so that the room will reach nearly to the set temperature by the desired time.
- For Cooling and Soft Dry mode, the operation will start 15 minutes before the set time.
- For Heating mode, the operation will start 30 minutes before the set time.
- For Automatic mode, the indoor fan will operate at SLo speed for 25 seconds, 30 minutes before the set time to detect the intake air temperature to determine the operation mode. The operation indication lamp will blink at this time.

8.8. Remote Control Signal Receiving Sound

- Long beep sound will be heard when:-
- Stopping the Air Conditioner using ON/OFF switch.
- Stopping the Sleep Mode.
- Stopping the Powerful Mode.
- Stopping the Economy Mode.
- Short beep sound will be heard for others.
- To switch off the beep sound:-
  Press the “Automatic Operation Button” continuously for 10 seconds or more (“beep” “beep” will be heard at the 10th second). Repeat the above if you want to switch ON the beep sound.

※ **However, if the "Automatic Operation Button" has been pressed the Automatic operation will be**
If you do not require this operation, you may change it by using the remote control.

8.9. Indoor Fan Speed Control

Auto Fan Speed Control
When set to Auto Fan Speed, the fan speed is shifted automatically between Stop to SHi depend on each operation as shown below.

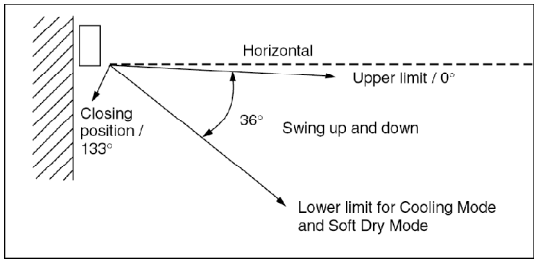
Manual Fan Speed Control
Basic fan speed adjustment (3 settings, from Lo to Hi) can be carried out by using the Fan Speed selection button at the remote control.

Tap				S Hi	Hi	Me	H Lo	C Lo	Lo-	S Lo	SSLo	Stop
Cooling	Normal	Manual	Hi		○							
			Me			○						
			Lo				○	○				
		Air Volume Auto			○	○				○		
		Sleep Shift						○				
	Powerful	Manual		○								
		Air Volume Auto		○								
		Sleep Shift						○				
	Economy	Manual								○		
		Air Volume Auto								○		
		Sleep Shift						○				
Soft Dry		Manual, Air-Volume Auto								○		○
		Sleep Shift						○				
	Normal	Manual	Hi	○					○	○	○	○
			Me			○			○	○	○	○
			Lo				○		○	○	○	○
		Air Volume Auto				○	○		○	○	○	○
		Sleep Shift							○			○
Heating	Powerful	Manual		○		○	○		○	○	○	○
		Air Volume Auto				○	○		○	○	○	○
		Sleep Shift							○			○
	Economy	Manual		○		○	○		○	○	○	○
		Air Volume Auto				○	○		○	○	○	○
		Sleep Shift							○			○
Mode judgement										○		

8.10. Airflow Direction Control

1. Vertical Airflow Direction

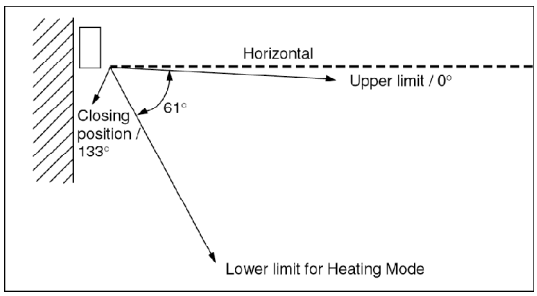
Cooling and Soft Dry Mode



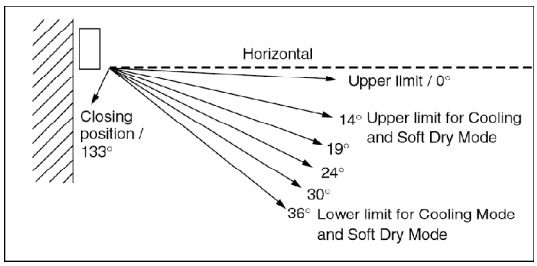
- The louver swings up and down as shown above.

- The louver does not swing when the Indoor Fan stops during operation at the upper limit.

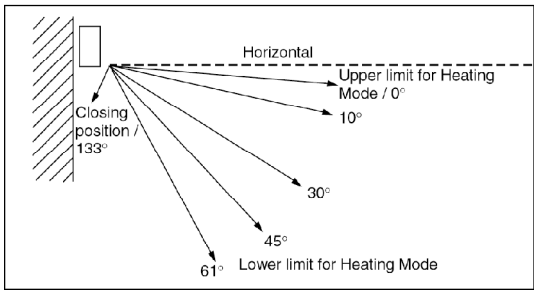
Heating Mode



- When the intake air temp. reaches 38°C, the louver is changed from upper to lower limit. When the intake air temp falls to 35°C, the louver is changed from lower to upper limit.



- The louver can be selected between 14° - 36° (as shown above) when pressing Manual Airflow Direction Selection Button.



- The louver can be selected between 0° - 61° (as shown above) when pressing Manual Airflow Direction Selection Button.

2. Horizontal Airflow Direction

- The left and right airflow direction louvers can be adjusted manually.

8.11. Economy Mode Operation

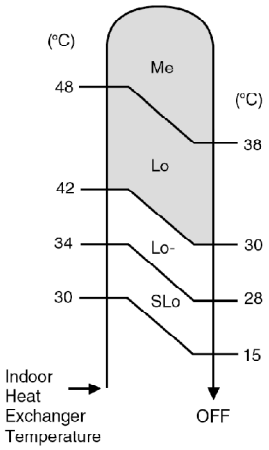
Purpose of this operation is to save or reduced electrical power consumption of the room air conditioner.
However consumer is advised to use Economy Mode operation after the room temperature reaches the desired temperature.

1. Cooling and Soft Dry Mode

- When the Economy Mode is set, the set temperature will be automatically increased 0.5°C against the present setting temperature. This operation automatically will be running under Random Fan speed.
- Vertical Airflow Direction:-
In "Manual" or "Auto" setting, the vane will automatically change to Auto Air Swing.

2. Heating Mode

- When the Economy Mode is set, the temperature will be automatically decreased 0.5°C against the present setting temperature.
- The Fan Speed will shift as shown below:



- When the Auto Fan speed is selected, the fan speed will automatically change from Lo to Me depending to the Indoor piping temperature.
- When the manual Fan Speed is selected, the fan speed will automatically change to Lo, then follows set fan speed when the Indoor piping temperature reaches 42°C.

Set Fan Speed

- Vertical Airflow Direction:-
In "Manual" or "Auto" setting, the vane will automatically change to Auto Air Swing. /

3. Economy Mode will stop if:

- Economy mode button is pressed again.
- Stopped by ON / OFF switch.
- Timer-off activates.
- Powerful mode button is pressed.
- Fan Speed control button is pressed.
- Sleep mode button is pressed ON.
- Operating mode is changed.
- Air Swing condition is changed.

8.12. Powerful Mode Operation

Purpose of this operation is to be obtain the setting temperature quickly.

1. Cooling and Soft Dry Mode

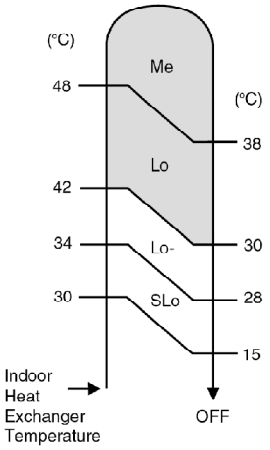
- When the Powerful Mode is set, the set temperature will be automatically decreased 3°C against the present setting temperature. This operation automatically will be running under Super High Fan speed.
- Vertical Airflow Direction:-
In "Manual" setting, the vane will automatically shift down 10°C lower than previous setting.
In "Auto" setting, the vane will automatically swing up and

down. However the upper and down. However the upper and lower limit will be shifted 10° downward.

2. Heating Mode

- When the Powerful Mode is set, the set temperature will be automatically increased 3°C against the present setting temperature.

- The Fan Speed will shift as shown below:



- When the Auto Fan speed is selected, the fan speed will automatically change from Lo to Me depending to the Indoor piping temperature.
- When the manual Fan Speed is selected, the fan speed will automatically set to Lo, then follows set fan speed when the Indoor piping temperature reaches 42°C.

Set Fan Speed

- Vertical Airflow Direction:-

In "Manual" setting, the vane will automatically shift down 5°C lower than previous setting.

In "Auto" setting, the vane will automatically shift between upper and lower limit depending on the intake air temperature as Heating Mode, Airflow Direction Auto-Control. However the upper and lower limit will be shifted 5°C downward.

3. Powerful mode will operate for 15 minutes only.

4. Powerful Mode will stop if:

- Powerful mode button is pressed again.
- Stopped by ON / OFF switch.
- Timer-off activates.
- Economy mode button is pressed.
- Sleep mode button is pressed.
- Operating mode is changed.

9. Operating Instructions

10. Installation Instructions

Required tools for Installation Works			
1. Philips screw driver	5. Spanner	9. Gas leak detector	13. Multimeter
2. Level gauge	6. Pipe cutter	10. Measuring tape	14. Torque wrench 18 N.m (1.8 kgf.m) 42 N.m (4.2 kgf.m) 55 N.m (5.5 kgf.m)
3. Electric drill, hole core drill (ø70 mm)	7. Reamer	11. Thermometer	15. Vacuum pump
4. Hexagonal wrench (4 mm)	8. Knife	12. Megameter	16. Gauge manifold

10.1. Safety Precautions

- Read the following “SAFETY PRECAUTIONS” carefully before installation.
- Electrical work must be installed by a licensed electrician. Be sure to use the correct rating of the power plug and main circuit for the model to be installed.
- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below. Incorrect installation due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indications.

⚠ WARNING	This indication shows the possibility of causing death or serious injury.

⚠ CAUTION	This indication shows the possibility of causing injury or damage to prope

The items to be followed are classified by the symbols:

	Symbol with background white denotes item that is PROHIBITED from doi

- Carry out test running to confirm that no abnormality occurs after the installation. Then, explain to user the operation, care and maintenance as stated in instructions. Please remind the customer

to keep the operating instructions for future reference.

⚠ WARNING

1. **Engage dealer or specialist for installation. If installation done by the user is defective, it will ca water leakage, electrical shock or fire.**
2. **Install according to this installation instruction strictly. If installation is defective, it will cause w leakage, electrical shock or fire.**
3. **Use the attached accessories parts and specified parts for installation. Otherwise, it will cause fall, water leakage, fire or electrical shock.**
4. **Install at a strong and firm location which is able to withstand the set's weight. If the strength is enough or installation is not properly done, the set will drop and cause injury.**
5. **For electrical work, follow the local national wiring standard, regulation and this installation ins An independent circuit and single outlet must be used. If electrical circuit capacity is not enoug defect found in electrical work, it will cause electrical shock or fire.**
6. **Use the specified cable (1.5 mm2) and connect tightly for indoor/outdoor connection. Connect t and clamp the cable so that no external force will be acted on the terminal. If connection or fixin perfect, it will cause heat-up or fire at the connection.**
7. **Wire routing must be properly arranged so that control board cover is fixed properly. If control cover is not fixed perfectly, it will cause heat-up at connection point of terminal, fire or electrica**
8. **When carrying out piping connection, take care not to let air substances other than the specifie refrigerant go into refrigeration cycle. Otherwise, it will cause lower capacity, abnormal high pre the refrigeration cycle, explosion and injury.**
9. **When connecting the piping, do not allow air or any substances other than the specified refrigerant (R410A) to enter the refrigeration cycle. Otherwise, this may lower the capacity, cause abnormally high pressure in the refrigeration cycle, and possibly result in explosion and injury.**
10. **-When connecting the piping, do not use any existing (R22) pipes and flare nuts. Using such same may cause abnormally high pressure in the refrigeration cycle (piping), and possibly result in explosion and injury. Use only R410A materials.**
    -Thickness of copper pipes used with R410A must be more than 0.8 mm. Never use copper pipes thinner than 0.8 mm.
    -It is desirable that the amount of residual oil is less than 40 mg/10 m.
11. **Do not modify the length of the power supply cord or use of the extension cord, and do not share the single outlet with other electrical appliances. Otherwise, it will cause fire or electrical shock.**

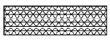
⚠ CAUTION

1. **The equipment must be earthed. It may cause electrical shock if grounding is not perfect.**
2. **Do not install the unit at place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.**
3. **Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, wa enter the room and damage the furniture.**

ATTENTION

1. **Selection of the installation location.**
   Select a installation location which is rigid and strong enough to support or hold the unit, and s location for easy maintenance.
2. **Power supply connection to the room air conditioner.**
   Connect the power supply cord of the room air conditioner to the mains using one of the follow method.
   Power supply point shall be the place where there is ease for access for the power disconnecti case of emergency.
   In some countries, permanent connection of this room air conditioner to the power supply is pr
   1. Power supply connection to the receptacle using a power plug. / Use an approved 15A/16A power plug with earth pin for the conne socket.
   2. Power supply connection to a circuit breaker for the permanent connection. Use an approved 16A circuit breaker for the permanent It must be a double pole switch with a minimum 3 mm contact gap.
3. **Do not release refrigerant.**
   Do not release refrigerant during piping work for installation, reinstallation and during repairing refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.
4. **Installation work.**
   It may need two people to carry out the installation work.
5. **Do not install this appliance in a laundry room or other location where water may drip from the etc.**

Attached accessories

No.	Accesories part	Qty.	No.	Accessories part	Qty.
1	Installation plate	1	6	Solar refreshing deodorizing filter 	1
2	Installation plate fixing screw	6	7	Remote Control holder	1
3	Remote control	1	8	Remote Control holder fixing screw	2
4	Battery	2	9	Drain elbow (A7BK, A9BK, A12BK, W7BK, W9BK, W12BK)	1
5	Air purifying filter	1			

Applicable piping kit
CZ-3F5, 7AEN (C7BK, C9BK, A7BK, A9BK, V7BK, V9BK, W7BK, W9BK)
CZ-4F5, 7, 10AN (C12BK, A12BK, V12BK, W12BK)

SELECT THE BEST LOCATION

INDOOR UNIT

- **There should not be any heat source or steam near the unit.**
- **There should not be any obstacles blocking the air circulation.**
- **A place where air circulation in the room is good.**
- **A place where drainage can be easily done.**
- **A place where noise prevention is taken into consideration.**
- **Do not install the unit near the door way.**
- **Ensure the spaces indicated by arrows from the wall, ceiling, fence or other obstacles.**
- **Recommended installation height for indoor unit shall be at least 2.3 m.**

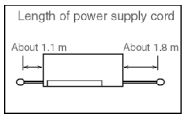
OUTDOOR UNIT

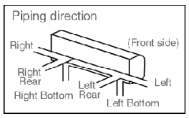
- **If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed.**
- **There should not be any animal or plant which could be affected by hot air discharged.**
- **Keep the spaces indicated by arrows from wall, ceiling, fence or other obstacles.**

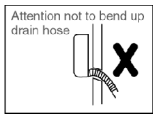
- **Do not place any obstacles which may cause a short circuit of the discharged air.**
- **If piping length is over the common length, additional refrigerant should be added as shown in the table.**

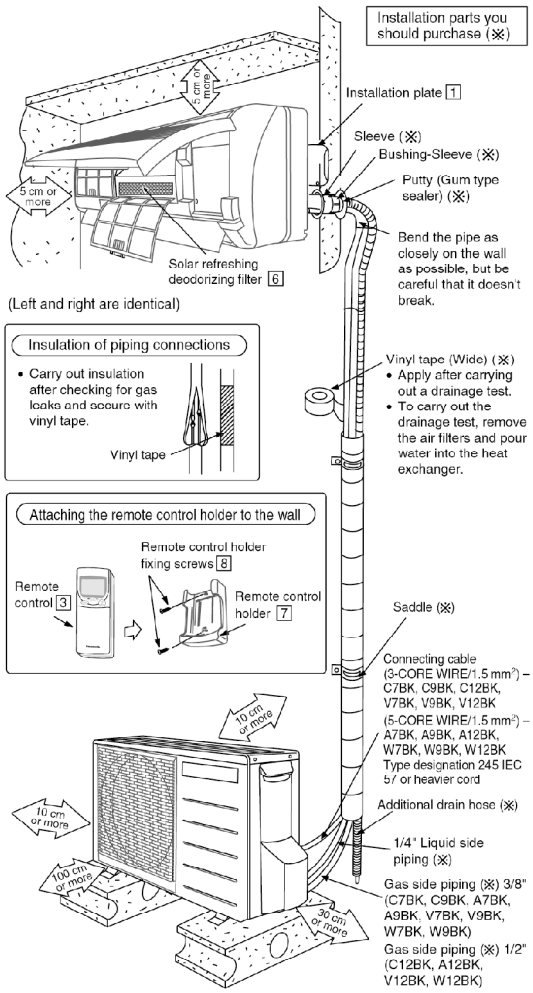
Model	Piping size		Common Length (m)	Max. Elevation (m)	Max. Piping Length (m)	Additional Refrigerant (g/m)
	Gas	Liquid				
C7BK/ C9BK	3/8”	1/4”	7.5	5	10	10
C12BK	1/2”	1/4”	7.5	5	15	10
A7BK/ A9BK	3/8”	1/4”	7.5	5	10	20
A12BK	1/2”	1/4”	7.5	5	15	20
V7BK/ V9BK	3/8”	1/4”	7.5	5	10	10
V12BK	1/2”	1/4”	7.5	5	15	15
W7BK/ W9BK	3/8”	1/4”	7.5	5	10	20
W12BK	1/2”	1/4”	7.5	5	15	20

Indoor/Outdoor Unit Installation Diagram








Installation parts you should purchase (※)
5 cm or more
Installation plate 1
Sleeve (※)
Bushing-Sleeve (※)
Putty (Gum type sealer) (※)
5 cm or more
Bend the pipe as closely on the wall as possible, but be careful that it doesn't break.
Solar refreshing deodorizing filter 6
(Left and right are identical)
Insulation of piping connections
• Carry out insulation after checking for gas leaks and secure with vinyl tape.
Vinyl tape
Vinyl tape (Wide) (※)
• Apply after carrying out a drainage test.
• To carry out the drainage test, remove the air filters and pour water into the heat exchanger.
Attaching the remote control holder to the wall
Remote control holder fixing screws 8
Remote control 3
Remote control holder 7
Saddle (※)
Connecting cable (3-CORE WIRE/1.5 mm²) – C7BK, C9BK, C12BK, V7BK, V9BK, V12BK
(5-CORE WIRE/1.5 mm²) – A7BK, A9BK, A12BK, W7BK, W9BK, W12BK
Type designation 245 IEC 57 or heavier cord
10 cm or more
Additional drain hose (※)
10 cm or more
1/4" Liquid side piping (※)
100 cm or more
Gas side piping (※) 3/8" (C7BK, C9BK, A7BK, A9BK, V7BK, V9BK, W7BK, W9BK)
30 cm or more
Gas side piping (※) 1/2" (C12BK, A12BK, V12BK, W12BK)

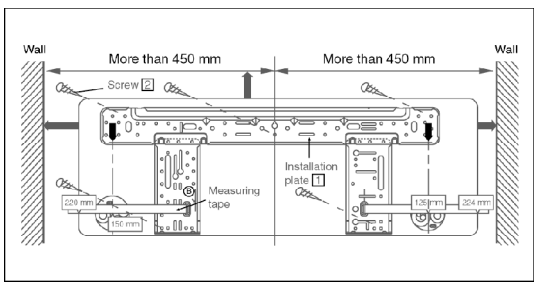
- This illustration is for explanation purposes only. / The indoor unit will actually face a different way.

10.2. INDOOR UNIT

10.2.1. SELECT THE BEST LOCATION / (Refer to “Select the best location” section)

10.2.2. HOW TO FIX INSTALLATION PLATE

The mounting wall is strong and solid enough to prevent it from the vibration.



The centre of installation plate should be at more than 450 mm at right and left of the wall.
The distance from installation plate edge to ceiling should more than 67 mm.
From installation plate left edge to unit’s left side is 47 mm.

From installation plate right edge to unit's right is 73 mm.

Ⓑ : **For left side piping, piping connection for liquid should be about 14 mm from this line.**

: **For left side piping, piping connection for gas should be about 56 mm from this line.**

: **For left side piping, piping connecting cable should be about 785 mm from this line.**

1. Mount the installation plate on the wall with 5 screws or more. / (If mounting the unit on the concrete wall consider using anchor bolts.)

- Always mount the installation plate horizontally by aligning the marking-off line with the thread and using a level gauge.

2. Drill the piping plate hole with ø70 mm hole-core drill.

- Line according to the arrows marked on the lower left and right side of the installation plate. The meeting point of the extended line is the centre of the hole. Another method is by putting measuring tape at position as shown in the diagram above. The hole centre is obtained by measuring the distance namely 150 mm and 125 mm for left and right hole respectively.

- Drill the piping hole at either the right or the left and the hole should be slightly slanted to the outdoor side.

10.2.3. TO DRILL A HOLE IN THE WALL AND INSTALL A SLEEVE OF PIPING

1. Insert the piping sleeve to the hole.

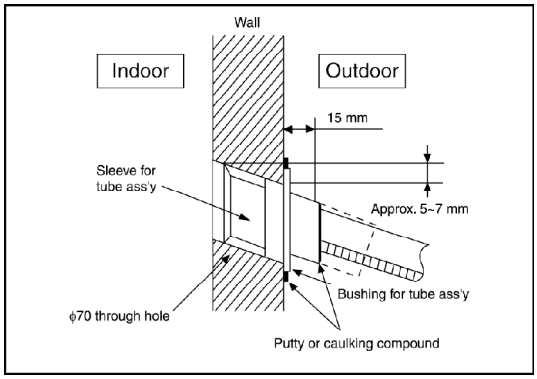
2. Fix the bushing to the sleeve.

3. Cut the sleeve until it extrudes about 15 mm from the wall.

> **Caution**
> **When the wall is hollow, please be sure to use the sleeve for tube ass'y to prevent dangers caused by mice biting the connecting cable.**

4. Finish by sealing the sleeve with putty or caulking compound at

the final stage.



10.2.4. INDOOR UNIT INSTALLATION

1. For the right rear piping

Pull out the Indoor piping
↓
Install the Indoor Unit
↓
Secure the Indoor Unit
↓
Insert the connecting cable

2. For the right and right bottom piping

Pull out the Indoor piping
↓
Install the Indoor Unit
↓
Insert the connecting cable
↓
Secure the Indoor Unit

3. For the embedded piping

Replace the drain hose

⬇

Bend the embedded piping

⬇

- Use a spring bender or equivalent to bend the piping so that the piping is not crushed.

Install the Indoor Unit

⬇

Cut and flare the embedded piping

⬇

- When determing the dimension of the piping, slide the unit all the way to the left on the installation plate.
  Refer to the section "Cutting and flaring the piping".

Pull the connecting cable into Indoor Unit

⬇

- The inside and outside connecting cable can be connected without removing the front grille.

Connect the piping

⬇

- Please refer to "Connecting the piping" column in outdoor unit section. (Below steps are done after connecting the outdoor piping and gas-leakage confirmation.)

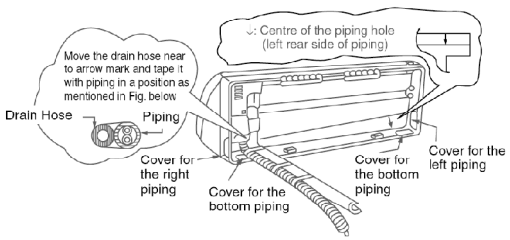
Insulate and finish the piping

⬇

- Please refer to "Piping and finishing" column of outdoor section and "Insulation of piping connections" column as mentioned in Indoor/ Outdoor Unit Installation.

Secure the Indoor Unit

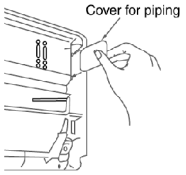
Pull out the piping and drain hose


: Centre of the piping hole
(left rear side of piping)
Move the drain hose near to arrow mark and tape it with piping in a position as mentioned in Fig. below
Drain Hose
Piping
Cover for the right piping
Cover for the bottom piping
Cover for the bottom piping
Cover for the left piping

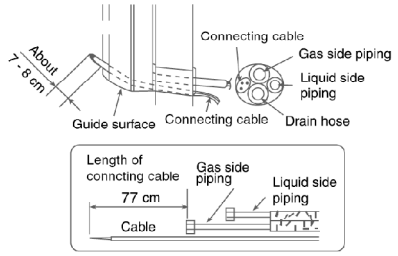
How to keep the cover

In case of the cover is cut, keep the cover at the rear of chassis as shown in the illustration for future reinstallation.

(Left, right and 2 bottom covers for piping)

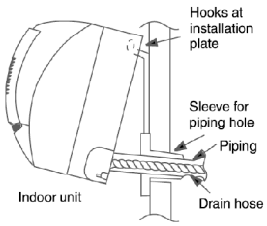


Insert the connecting cable



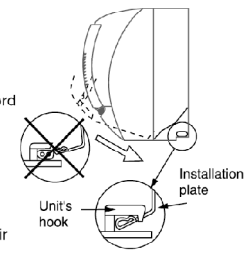
Install the Indoor Unit

Hook the indoor unit onto the upper portion of installation plate (Engage the indoor unit with the upper edge of the installation plate). Ensure the hooks are properly seated on the installation plate by moving in left and right.

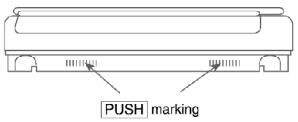


Secure the Indoor Unit

1. Tape the extra power supply cord in a bundle and keep it behind the chassis.
   - Ensure that the power supply cord is not clamped in between the unit's hook (2 positions) and installation plate.
2. Press the lower left and right side of the unit against the installation plate until hooks engages with their slots (sound click).



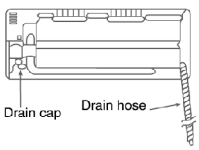
To take out the unit, push the PUSH marking at the bottom unit, and pull it slightly towards you to disengage the hooks from the unit.

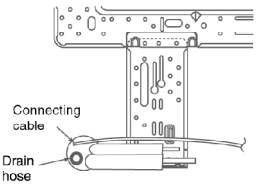


(This can be used for left rear piping & left bottom piping also.)

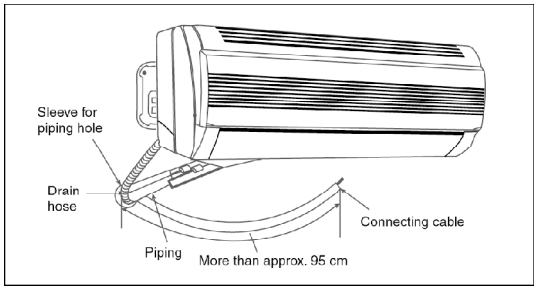
Exchange the drain hose and the cap

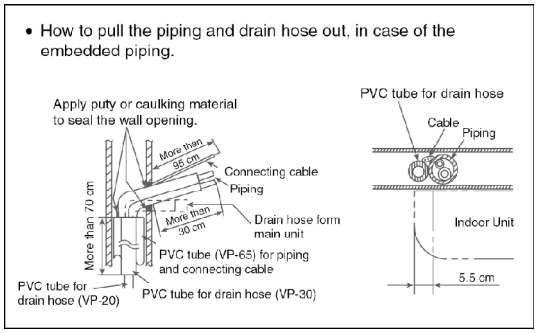
Refer view for left piping installation

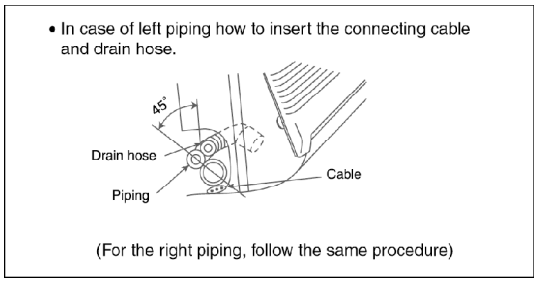




Adjust the piping slightly downwards




• How to pull the piping and drain hose out, in case of the embedded piping.
Apply puty or caulking material to seal the wall opening.
More than 95 cm
Connecting cable
Piping
More than 70 cm
More than 90 cm
Drain hose form main unit
PVC tube (VP-65) for piping and connecting cable
PVC tube for drain hose (VP-20)
PVC tube for drain hose (VP-30)
PVC tube for drain hose
Cable
Piping
Indoor Unit
5.5 cm


• In case of left piping how to insert the connecting cable and drain hose.
45°
Drain hose
Piping
Cable
(For the right piping, follow the same procedure)

10.2.5. CONNECT THE CABLE TO THE INDOOR UNIT

1. The inside and outside connecting cable can be connected without removing the front grille.

2. Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed 3 (C7BK, C9BK, C12BK, V7BK, V9BK, V12BK) or 5 (A7BK, A9BK, A12BK, W7BK, W9BK, W12BK) × 1.5 mm² flexible cord, type designation 245 IEC 57 or heavier cord.

- Ensure the color of wires of outdoor unit and the terminal Nos. are the same to the indoor's respectively.
- Earth lead wire shall be longer than the other lead wires as shown in the figure for the electrical safety in case of the slipping out of the cord from the anchorage. /

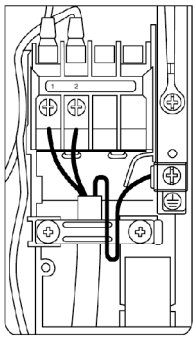
C7BK, C9BK, C12BK, V7BK, V9BK, V12BK

Terminals on the indoor unit	1	2	⏚
Color of wires			
Terminals on the outdoor unit	1	2	⏚

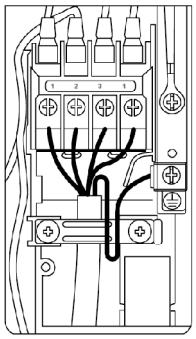
A7BK, A9BK, A12BK, W7BK, W9BK, W12BK

Terminals on the indoor unit	1	2	3	4	⏚
Color of wires					
Terminals on the outdoor unit	1	2	3	4	⏚

- Secure the cable onto the control board with the holder (clamper).



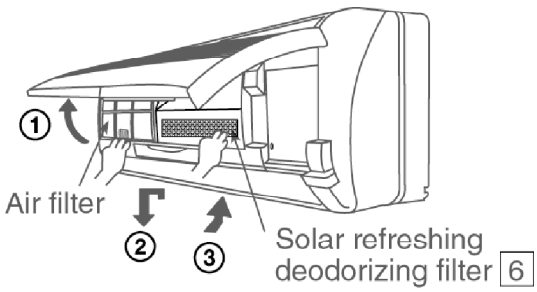
C7BK, C9BK, C12BK,
V7BK, V9BK, V12BK



A7BK, A9BK, A12BK,
W7BK, W9BK, W12BK

INSTALLATION OF AIR PURIFYING FILTERS

1. **Open the front panel.**
2. **Remove the air filters.**
3. **Put air purifying filters (left) and solar refreshing deodorizing filter (right) into place as shown in illustration below.**



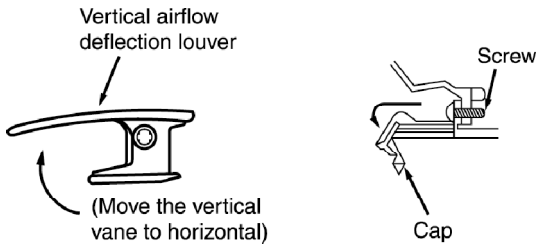
HOW TO TAKE OUT FRONT GRILLE

Please follow the steps below to take out front grille if necessary such as when servicing.

1. **Set the vertical airflow direction louver to the horizontal position.**
2. **Slide down the two caps on the front grille as shown in the illustration below, and then remove the two mounting screws.**

3. Pull the lower section of the front grille towards you to remove the front grille.

When reinstalling the front grille, first set the vertical airflow direction louver to the horizontal position and then carry out above steps 2 - 3 in the reverse order.



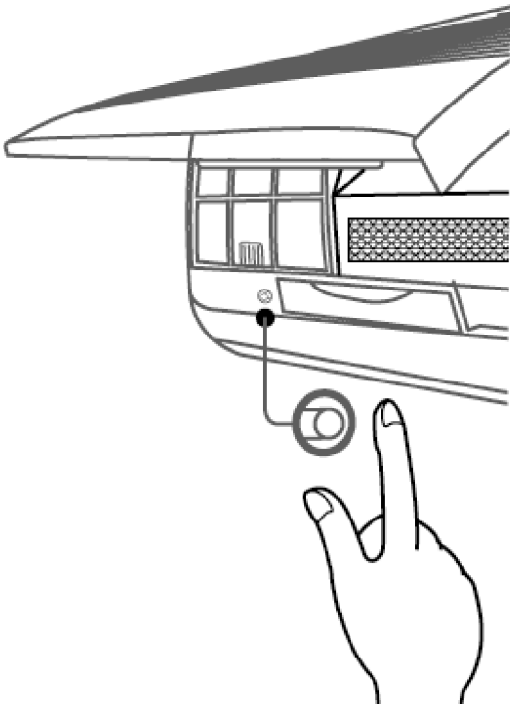
AUTO SWITCH OPERATION

The below operations will be performed by pressing the "AUTO" switch.

1. AUTO OPERATION MODE
The Auto operation will be activated immediately once the Auto Switch is pressed.

2. TEST RUN OPERATION (FOR PUMP DOWN/SERVICING PURPOSE)
The Test Run operation will be activated if the Auto Switch is pressed continuously for more than 5 sec. to below 10 sec.. A "pep" sound will occur at the fifth sec., in order to identify the starting of Test Run operation

3. REMOTE CONTROLLER RECEIVING SOUND ON/OFF
The ON/OFF of Remote Controller receiving sound can be change over by pressing the "AUTO" Switch continuously for 10 sec. and above. A "pep", "pep" sound will occur at the tenth sec., in order to indicate the "ON/OFF" change over of remote control receiving sound.



10.3. OUTDOOR UNIT

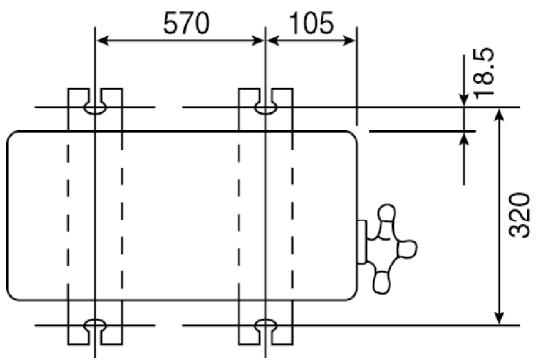
10.3.1. SELECT THE BEST LOCATION / (Refer to “Select the best location” section)

10.3.2. INSTALL THE OUTDOOR UNIT

- After selecting the best location, start installation according to Indoor/Outdoor Unit Installation Diagram.

1. Fix the unit on concrete or rigid frame firmly and horizontally by bolt nut. (ø10 mm).

2. When installing at roof, please consider strong wind and earthquake. Please fasten the installation stand firmly with bolt or nails.

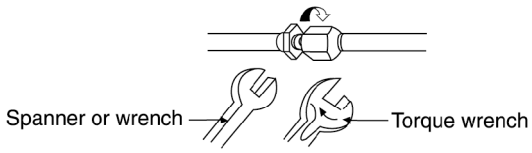


10.3.3. CONNECTING THE PIPING

Connecting The Piping To Indoor Unit

Please make flare after inserting flare nut (locate at joint portion of tube assembly) onto the copper pipe. (In case of using long piping)
Connect the piping

- **Align the center of piping and sufficiently tighten the flare nut with fingers.**
- **Further tighten the flare nut with torque wrench in specified torque as stated in the table.**

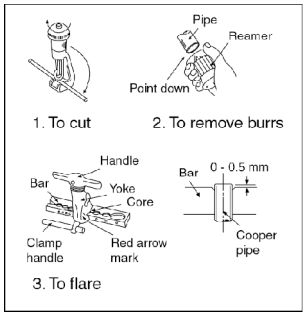


MODEL	Piping size (Torque)	
	Gas	Liquid
C7BK, C9BK, A7BK, A9BK, V7BK, V9BK, W7BK, W9BK	3/8” (42 N.m)	1/4” (18 N.m)
C12BK, A12BK, V12BK, W12BK	1/2” (55 N.m)	1/4” (18 N.m)

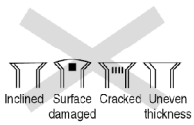
Connecting The Piping To Outdoor Unit
Decide piping length and then cut by using pipe cutter. Remove burrs from cut edge. Make flare after inserting the flare nut (located at valve) onto the copper pipe.
Align center of piping to valves and then tighten with torque wrench to the specified torque as stated in the table.

CUTTING AND FLARING THE PIPING

1. **Please cut using pipe cutter and then remove the burrs.**
2. **Remove the burrs by using reamer. If burrs is not removed, gas leakage may be caused.**
   Turn the piping end down to avoid the metal powder entering the pipe.
3. **Please make flare after inserting the flare nut onto the copper pipes.**



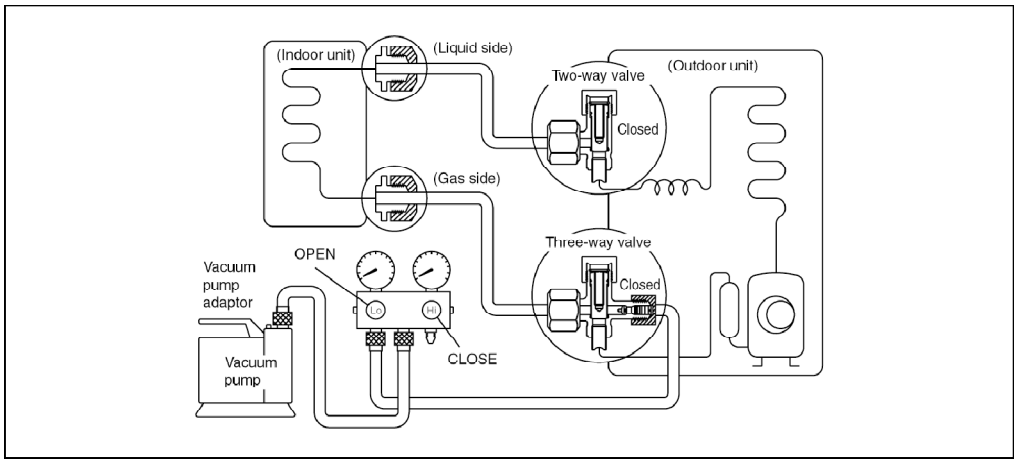
■ Improper flaring ■



When properly flared, the internal surface of the flare will evenly shine and be of even thickness. Since the flare part comes into contact with the connections, carefully check the flare finish.

10.3.4. (a) EVACUATION OF THE EQUIPMENT (FOR EUROPE & OCEANIA DESTINATION)

WHEN INSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.



1. **Connect a charging hose with a push pin to the Low and High side of a charging set and the service port of the 3-way valve.**

   - Be sure to connect the end of the charging hose with the push pin to the service port.

2. **Connect the center hose of the charging set to a vacuum pump with check valve, or vacuum pump and vacuum pump adaptor.**
3. **Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 cmHg (0 MPa) to / -76 cmHg (-0.1 MPa). Then evacuate the air approximately ten minutes.**
4. **Close the Low side valve of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately five minutes.**
   Note: BE SURE TO FOLLOW THIS PROCEDURE IN ORDER TO AVOID REFRIGERANT GAS LEAKAGE.
5. **Disconnect the charging hose from the vacuum pump and from**

the service port of the 3-way valve.

6. Tighten the service port caps of the 3-way valve at torque of 18 N.m with a torque wrench.
7. Remove the valve caps of both of the 2-way valve and 3-way valve. Position both of the valves to “OPEN” using a hexagonal wrench (4 mm).
8. Mount valve caps onto the 2-way valve and the 3-way valve.

    - Be sure to check for gas leakage.

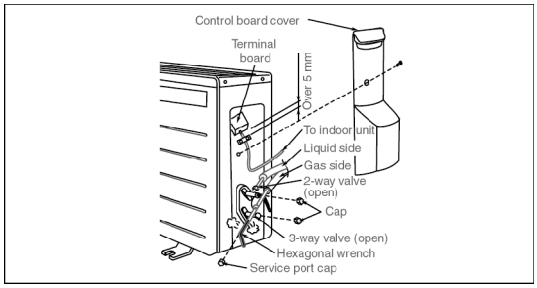
CAUTION

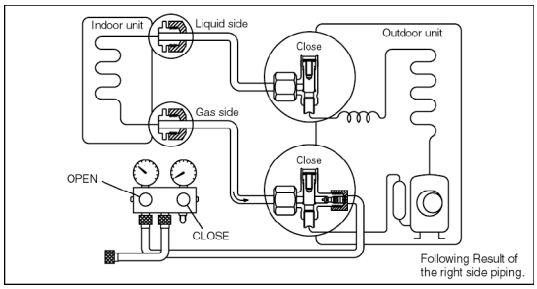
- If gauge needle does not move from 0 cmHg (0 MPa) to -76 cmHg (-0.1 MPa), in step 3 above tak following measure:
- If the leak stops when the piping connections are tightened further, continue working from step
- If the leak does not stop when the connections are retightened, repair the location of leak.
- Do not release refrigerant during piping work for installation and reinstallation. Take care of the refrigerant, it may cause frostbite.

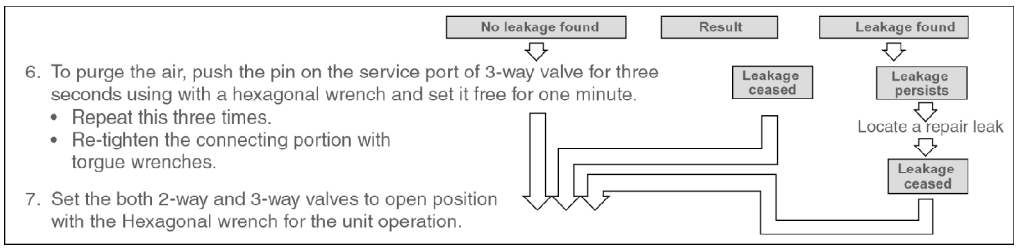
10.3.5. (b) AIR PURGING OF THE PIPING AND INDOOR UNIT

The remaining air in the Refrigeration cycle which contains moisture may cause malfunction on the compressor.

1. Remove the caps from the 2-way and 3-way valves.
2. Remove the service-port cap from the 3-way valves.
3. To open the valve, turn the valve stem of 2-way valve counter-clockwise approx. 90° and hold it there for ten seconds, then close it.
4. Check gas-leakage of the connecting portion of the pipings. For the left pipings, refer to item 4(A).
5. To open 2-way valve again, turn the valve stem counter-clockwise until it stops.






No leakage found
Result
Leakage found
6. To purge the air, push the pin on the service port of 3-way valve for three seconds using with a hexagonal wrench and set it free for one minute.
• Repeat this three times.
• Re-tighten the connecting portion with torgue wrenches.
7. Set the both 2-way and 3-way valves to open position with the Hexagonal wrench for the unit operation.
Leakage ceased
Leakage persists
Locate a repair leak
Leakage ceased

4(A). Checking gas leakage for the left piping.

(1) * Connect the manifold gauge to the service port of 3-way valve.
Measure the pressure.

*****

(2) * Keep it for 5-10 minutes.
Ensure that the pressure indicated on the
*** gauge is the same as that of measured during the first time.**

10.3.6. CONNECT THE CABLE TO THE OUTDOOR UNIT

1. Remove the control board cover from the unit by loosening the screw.

2. Connecting cable between indoor unit and outdoor unit shall be approved polychloroprene sheathed 3 (C7BK, C9BK, C12BK,

V7BK, V9BK, V12BK) or 5 (A7BK, A9BK, A12BK, W7BK, W9BK, W12BK) × 1.5 mm² flexible cord, type designation 245 IEC 57 or heavier cord.

CS/CU-C7BK, C9BK, C12BK, V7BK, V9BK, V12BK

Terminals on the indoor unit	1	2	⏚
Color of wires			
Terminals on the outdoor unit	1	2	⏚

CS/CU-A7BK, A9BK, A12BK, W7BK, W9BK, W12BK

Terminals on the indoor unit	1	2	3	4	⏚
Color of wires					
Terminals on the outdoor unit	1	2	3	4	⏚

3. **Secure the cable onto the control board with the holder (clamper).**
4. **Attach the control board cover back to the original position with the screw.**

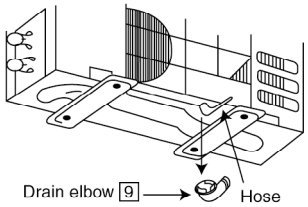
10.3.7. PIPE INSULATION

1. **Please carry out insulation at pipe connection portion as mentioned in Indoor/Outdoor Unit Installation Diagram. Please wrap the insulated piping end to prevent water from going inside the piping.**
2. **If drain hose or connecting piping is in the room (where dew may form), please increase the insulation by using POLY-E FOAM with thickness 6 mm or above.**

DISPOSAL OF OUTDOOR UNIT DRAIN WATER

- **If a drain elbow is used, the unit should be placed on a stand which is taller than 3 cm.**
- **If the unit is used in an area where temperature falls below 0°C for 2 or 3 days in succession, it is recommended not to use a drain elbow, for the drain water freezes and the fan will not rotate.**

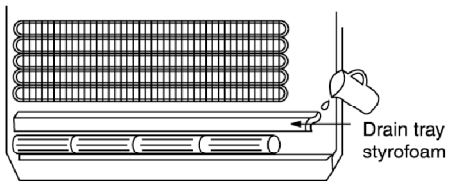
CU-A7BK, A9BK, A12BK
CU-W7BK, W9BK, W12BK



Install the hose at an angle so that the water smoothly flows out.

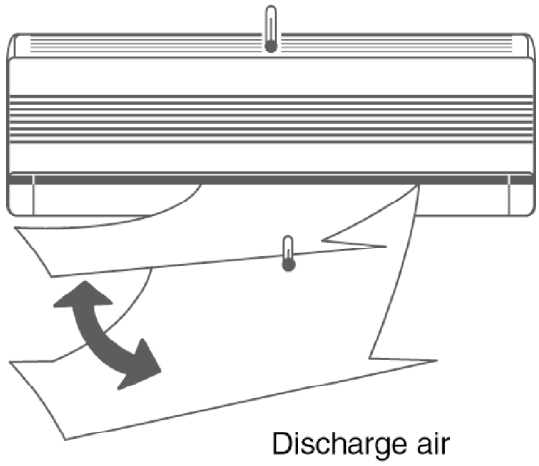
CHECK THE DRAINAGE

- Open front panel and remove air filters. / (Drainage checking can be carried out without removing the front grille.)
- Pour a glass of water into the drain tray-styrofoam.
- Ensure that water flows out from drain hose of the indoor unit.



EVALUATION OF THE PERFORMANCE

- Operate the unit at cooling operation mode for fifteen minutes or more.
- Measure the temperature of the intake and discharge air.
- Ensure the difference between the intake temperature and the discharge is more than 8°C.



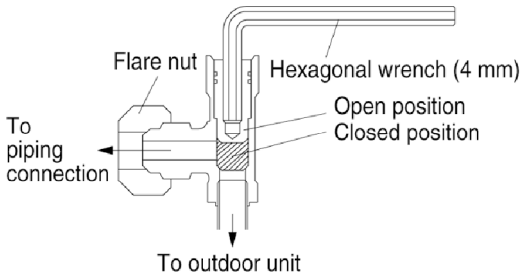
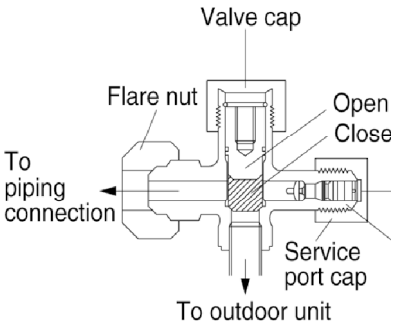
NOTE:

These equipment shall be connected to a suitable mains network with a main impedance less than the following:
CS-A9BKP / CU-A9BKP5: 0.44 Ω
CS-C12BKP / CU-C12BKP5: 0.47 Ω
CS-A12BKP / CU-A12BKP5: 0.47 Ω
CS-V12BKP / CU-V12BKP5: 0.45 Ω
CS-W12BKP / CU-W12BKP5: 0.45 Ω

CHECK ITEMS

- [ ] **Is there any gas leakage at flare nut connections?**
- [ ] **Has the heat insulation been carried out at flare nut connection?**
- [ ] **Is the connecting cable being fixed to terminal board firmly?**
- [ ] **Is the connecting cable being clamped firmly?**
- [ ] **Is the drainage OK?**
  (Refer to “Check the drainage” section)
- [ ] **Is the earth wire connection properly done?**
- [ ] **Is the indoor unit properly hooked to the installation plate?**
- [ ] **Is the power supply voltage complied with rated value?**
- [ ] **Is there any abnormal sound?**
- [ ] **Is the cooling operation normal?**
- [ ] **Is the thermostat operation normal?**
- [ ] **Is the remote control’s LCD operation normal?**
- [ ] **Is the air purifying filter installed?**

11. 2-way, 3-way Valve

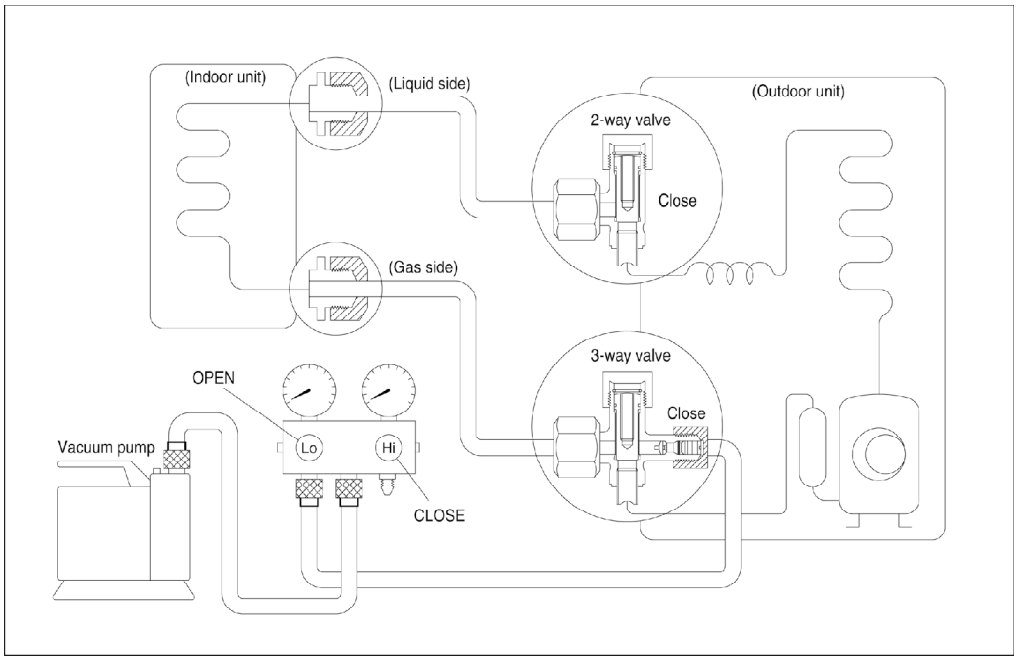
	2-way Valve (Liquid Side)	3-way Valve (Gas Side
		
Works	**Shaft Position**	**Shaft Position**
Shipping	**Close (With valve cap)**	**Close (With valve cap)**
Evacuation (Installation and Re-installation)	**Close (Counter-Clockwise)**	**Close (Clockwise)**
Operation	**Open (With valve cap)**	**Open (With valve cap)**
Pumping down (Transferring)	**Close (Clockwise)**	**Open (Counter-Clockwise)**
Evacuation (Servicing)	**Open**	**Open**
Gas charging (Servicing)	**Open**	**Open**
Pressure check (Servicing)	**Open**	**Open**

	2-way Valve (Liquid Side)	3-way Valve (Gas Side	
Gas releasing (Servicing)	Open	Open	Op (Conn manifol

11.1. Evacuation of the Equipment (For Europe & Oceania Destination)

11.1.1. Evacuation of Installation

WHEN INSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.
If air remain in the indoor unit and refrigeration pipes, it will affect the compressor, reduce to cooling capacity, and could lead to a malfunction.



Procedure:

1. **Connect a charging hose with a push pin to the Low side of a charging set and the service port of a 3-way valve.**
   - **Be sure to connect the end of the charging hose with the push pin to the service port.**
2. **Connect the centre hose of the charging set to a vacuum pump.**
3. **Turn on the power switch of the vacuum pump and make sure that**

the needle in the gauge moves from 0 MPa (0 cmHg) to -0.1 MPa (-76 cmHg). Then evacuate the air for approximately ten minutes.

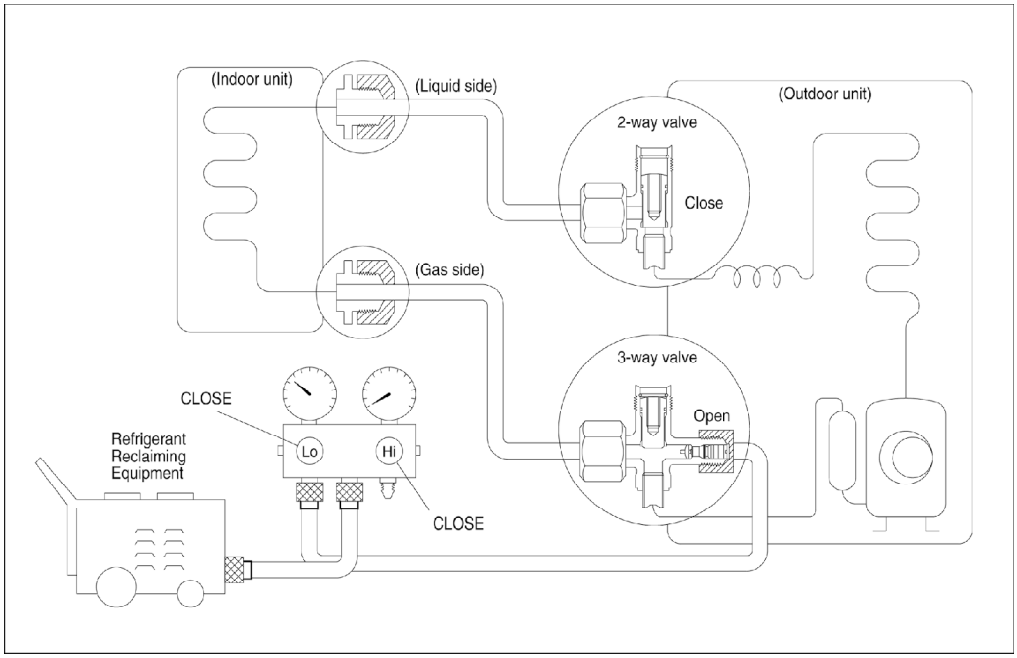
4. **Close the Low side valve of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately five minutes.**
   BE SURE TO TAKE THIS PROCEDURE IN ORDER TO AVOID GAS LEAKAGE.
5. **Disconnect the charging hose from the vacuum pump and from the service port of the 3-way valve.**
6. **Tighten the service port cap at a torque of 18 N.m with a torque wrench.**
7. **Remove the valve caps of the 2-way valve and the 3-way valve. Position both of the valves to “open” using a hexagonal wrench (4 mm).**
8. **Mount the valve caps onto the 2-way and 3-way valves.**

   - Be sure to check for gas leakage.

Caution

If gauge needle does not move from 0 cmHg to -76 cmHg in step (3) above, take the following measures:
If the leaks stop when the piping connections are tightened further, continue working from step (3).
If the leaks do not stop when the connections are retightened, repair the location of the leak.

11.1.2. Pumping down



Procedure:

1. **Confirm that both the 2-way and 3-way valves are set to the opened position.**

   - Remove the valve stem caps and confirm that the valve stems are in the opened position.
   - Be sure to use a hexagonal wrench to operate the valve stems.

2. **Operate the unit for 10 to 15 minutes.**
3. **Stop operation and wait for 3 minutes, then connect the charge set to the service port of the 3-way valve.**

   - Connect the charge hose with the push pin to the Gas service port.

4. **Air purging of the charge hose.**

   - Open the low-pressure valve on the charge set slightly to purge air from the charge hose.

5. **Set the 2-way valve to the closed position.**
6. **Operate the air conditioner at the cooling cycle and stop it when the gauge indicates 0 MPa (0 kg/cm^{2}G).**
   If the unit cannot be operated at the cooling condition (weather is rather cool), short the Pumping Down pins on the Main Control P.C.B.

(Simply press the pumping down button if it is equipped.)
So that the unit can be operated.

7. Immediately set the 3-way valve to the closed position.

   - Do this quickly so that the gauge ends up indicating 0.1 MPa (1 kg/cm^{2}G) to 0.3 MPa (3 kg/cm^{2}G).

8. Use refrigerant reclaiming equipment to collect refrigerant from indoor unit and pipes.

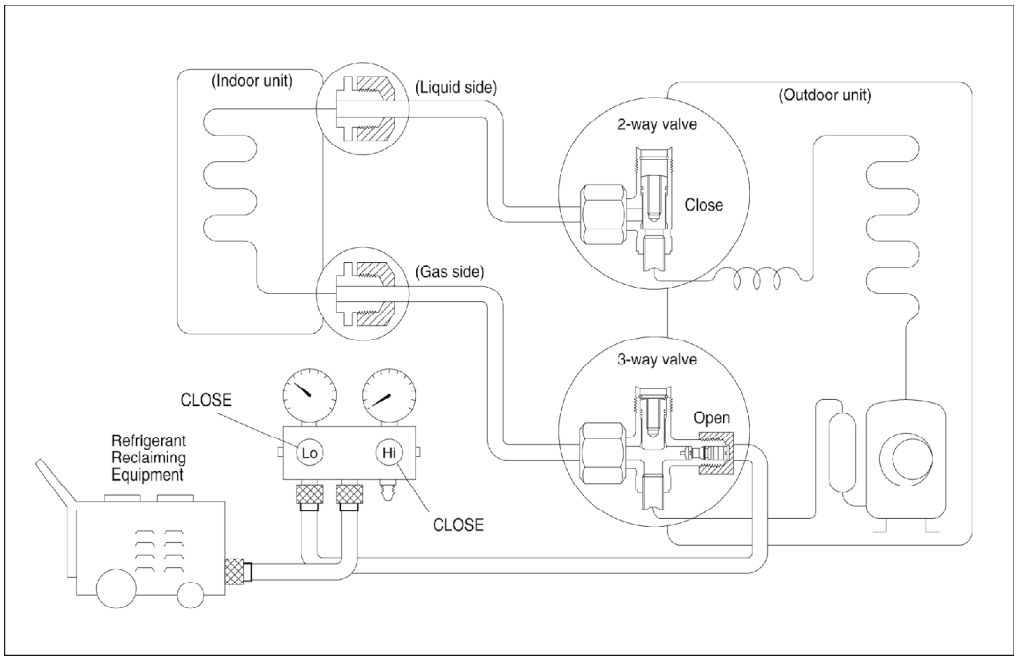
9. Disconnect the charge set, and mount the 2-way and 3-way valve's stem caps and the service port caps.

   - Use a torque wrench to tighten the service port cap to a torque of 18 N.m.
   - Be sure to check for gas leakage.

10. Disconnect pipes from indoor unit and outdoor unit.

11.1.3. Evacuation of Re-installation

WHEN REINSTALLING AN AIR CONDITIONER, BE SURE TO EVACUATE THE AIR INSIDE THE INDOOR UNIT AND PIPES in the following procedure.
If air remain in the indoor unit and refrigeration pipes, it will affect the compressor, reduce to cooling capacity, and could lead to a malfunction.



Procedure:

1. **Connect a charging hose with a push pin to the Low side of a charging set and the service port of the 3-way valve.**

   - Be sure to connect the end of the charging hose with the push pin to the service port.

2. **Connect the centre hose of the charging set to a vacuum pump.**
3. **Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0 MPa (0 cmHg) to -0.1 MPa (-76 cmHg). Then evacuate the air for approximately ten minutes.**
4. **Close the Low side valve of the charging set and turn off the vacuum pump. Make sure that the needle in the gauge does not move after approximately five minutes.**
   BE SURE TO TAKE THIS PROCEDURE IN ORDER TO AVOID GAS LEAKAGE.
5. **Disconnect the charging hose from the vacuum pump.**
6. **Charge the pipes and indoor unit with gas refrigerant from 3-way valve service port, and then discharge the refrigerant until low side (gas side) gauge needle indicates 0.3 MPa (3 kg/cm^2).**
7. **Tighten the service port cap at a torque of 18 N.m with a torque wrench.**
8. **Remove the valve caps of the 2-way valve and the 3-way valve. Position both of the valves to “open” using a hexagonal wrench (4 mm).**
9. **Mount the valve caps onto the 2-way and 3-way valves.**

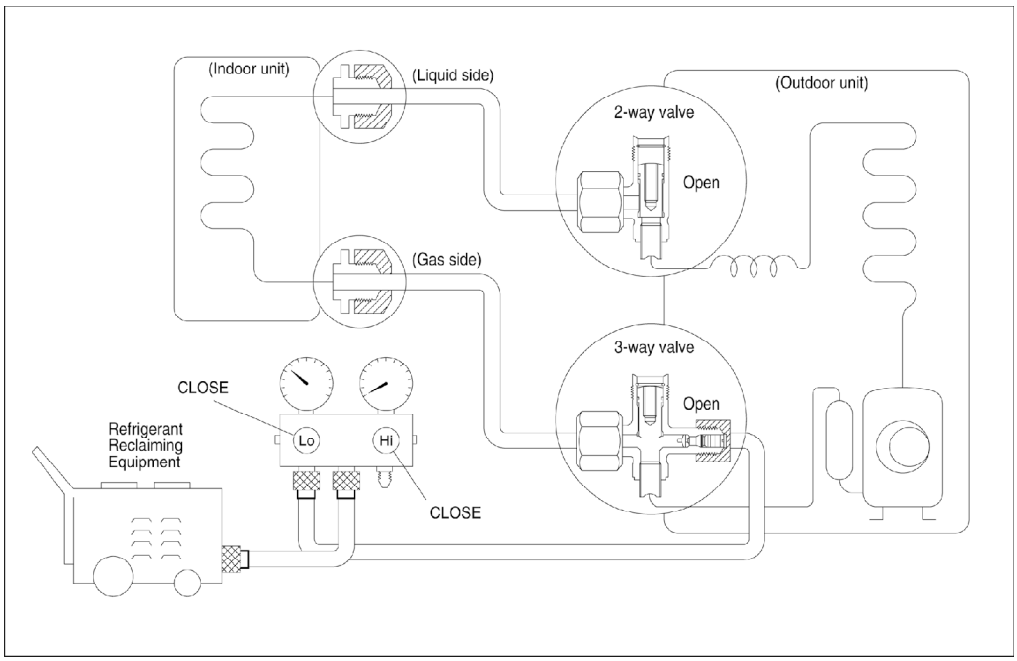
   - BE SURE TO USE REFRIGERANT RECLAIMING EQUIPMENT WHILE DISCHARGING THE REFRIGERANT.
   - Purge the air from charge set’s centre hose.
   - Be sure to check for gas leakage.

Caution

If gauge needle does not move from 0 MPA (0 cmHg) to -0.1 MPa (-76 cmHg) in step (3) above, take the following measures:
If the leaks stop when the piping connections are tightened further, continue working from step 3.
If the leaks do not stop when the connections are retightened, repair the location of the leak.

11.1.4. Balance refrigerant of the 2-way, 3-way valves

(Lack of refrigerant in the refrigeration cycle)



Procedure:

1. **Confirm that both the 2-way and 3-way valves are set to the open position.**
2. **Connect the charge set to the 3-way valve's service port.**
   - **Leave the valve on the charge set closed.**
   - **Connect the charge hose with the push-pin to the service port.**
3. **Connect the charge set's centre hose to refrigerant reclaiming**

equipment.

- Purge the air from charge hose.

4. Open the valve (Low side) on the charge set and discharge the refrigerant until the gauge indicates 0.05 MPa (0.5 kg/cm^{2}G) to 0.1 MPa (1 kg/cm^{2}G).

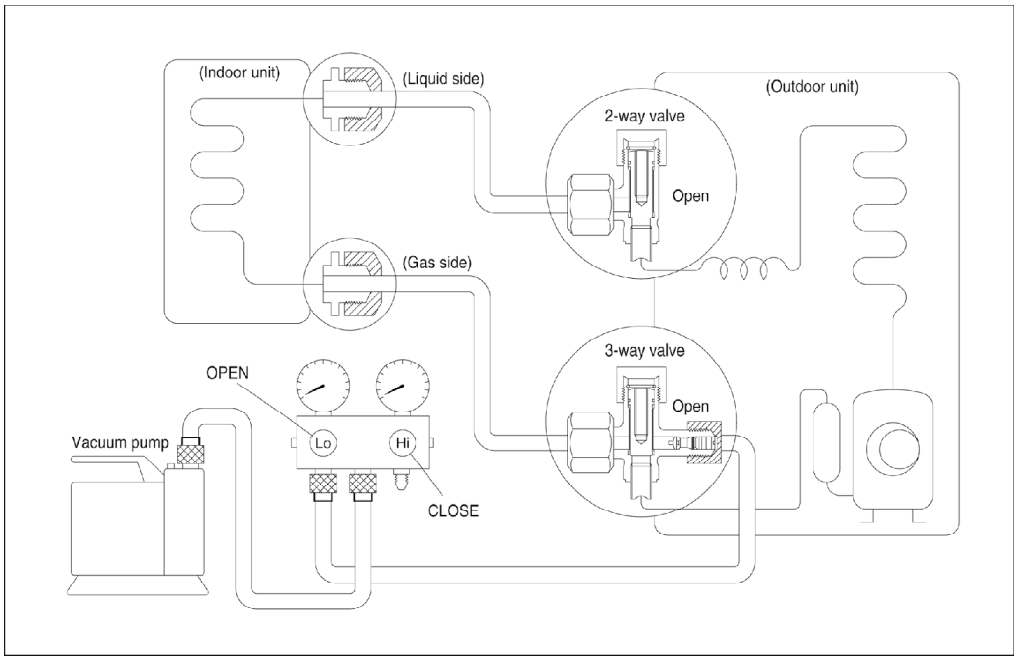
- If there is no air in the refrigeration cycle (the pressure when the air conditioner is not running is higher than 0.1 MPa (1 kg/cm^{2}G), discharge the refrigerant until the gauge indicates 0.05 MPa (0.5 km/cm^{2}G) to 0.1 MPa (1 kg/cm^{2}G). If this is the case, it will not be necessary to apply a evacuation.

- Discharge the refrigerant gradually; if it is discharged too suddenly, the refrigeration oil will also be discharged.

5. Turn on refrigerant reclaiming equipment.

11.1.5. Evacuation

(No refrigerant in the refrigeration cycle)



Procedure:

1. Connect the vacuum pump to the charge set's centre hose.

2. Evacuation for approximately one hour.

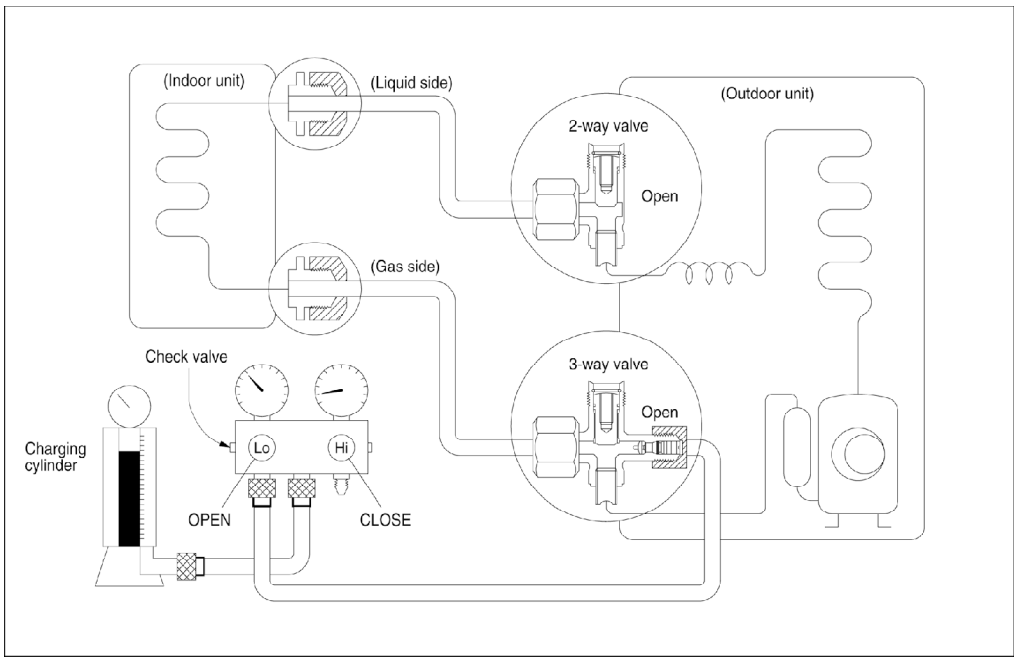
- Confirm that the gauge needle has moved toward -0.1 MPa (-76 cmHg) [vacuum of 4 mmHg or less.]

3. Close the valve (Low side) on the charge set, turn off the vacuum pump, and confirm that the gauge needle does not move (approximately 5 minutes after turning off the vacuum pump).
4. Disconnect the charge hose from the vacuum pump.

- Vacuum pump oil
  If the vacuum pump oil becomes dirty or depleted, replenish as needed.

11.1.6. Gas charging

(After Evacuation)



Procedure:

1. Connect the charge hose to the charging cylinder.

- Connect the charge hose which you disconnected from the vacuum pump to the valve at the bottom of the cylinder.

2. Purge the air from the charge hose.

- Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air (be careful of the

liquid refrigerant).

3. Open the valve (Low side) on the charge set and charge the system with liquid refrigerant.

   - If the system cannot be charged with the specified amount of refrigerant, it can be charged with a little at a time (approximately 150 g each time) while operating the air conditioner in the cooling cycle; however, one time is not sufficient, wait approximately 1 minute and then repeat the procedure. (pumping down-pin)

This is different from previous procedures. Because you are charging with liquid refrigerant from the gas side, absolutely do no attempt to charge with large amount of liquid refrigerant while operating the air conditioner.

4. Immediately disconnect the charge hose from the 3-way valve's service port.

   - Stopping partway will allow the refrigerant to be discharged.
   - If the system has been charged with liquid refrigerant while operating the air conditioner, turn off the air conditioner before disconnecting the hose.

5. Mount the valve stem caps and the service port cap.

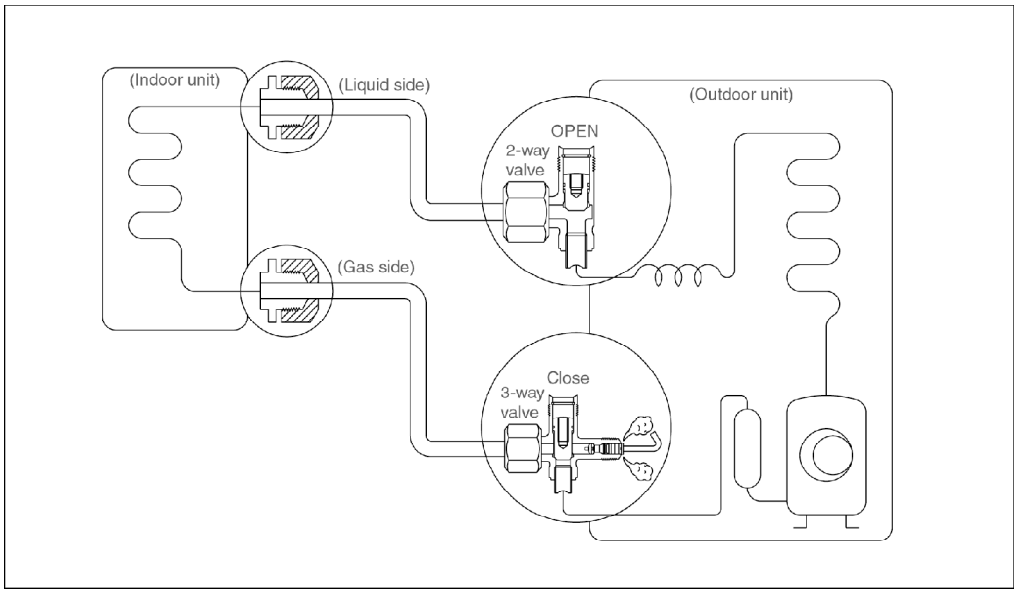
   - Use torque wrench to tighten the service port cap to a torque of 18 N.m.
   - Be sure to check for gas leakage.

11.2. Air Purging of the Piping and Indoor Unit

11.2.1. Air purging (Installation)

Required tools: hexagonal wrench, adjustable wrench, torque wrenches, wrench to hold the joints and gas leak detector. / The additional gas for air purging has been charged in the outdoor unit. / However, if the flare connections have not been done correctly and there gas leaks, a gas cylinder and the charge set will be needed.
The air in the indoor unit and in the piping must be purged. If air remains in the refrigeration pipings, it will affect the compressor, reduce the cooling capacity, and could lead to a

malfunction.



Service port cap / Be sure, using a torque wrench to tighten the service port cap (after using the service port), so that it prevents the gas leakage from the refrigeration cycle.

Procedure:

1. **Recheck the piping connections.**
2. **Open the valve stem of the 2-way valve counter-clockwise approximately 90°, wait 10 seconds, and then set it to closed position.**

   - Be sure to use a hexagonal wrench to operate the valve stem.
3. **Check for gas leakage.**

   - Check the flare connection for gas leakage.
4. **Purge the air from the system**

   - Set the 2-way valve to the open position and remove the cap from the 3-way valve's service port.
   - Using the hexagonal wrench to press the valve core pin, discharge for three seconds and then wait for one minute. / Repeat this three times.
5. **Use torque wrench to tighten the service port cap to a torque of 1.8 kg.m. (18 N.m).**
6. **Set the 3-way valve to the opened position.**

7. Mount the valve stem nuts to the 2-way and 3-way valves.

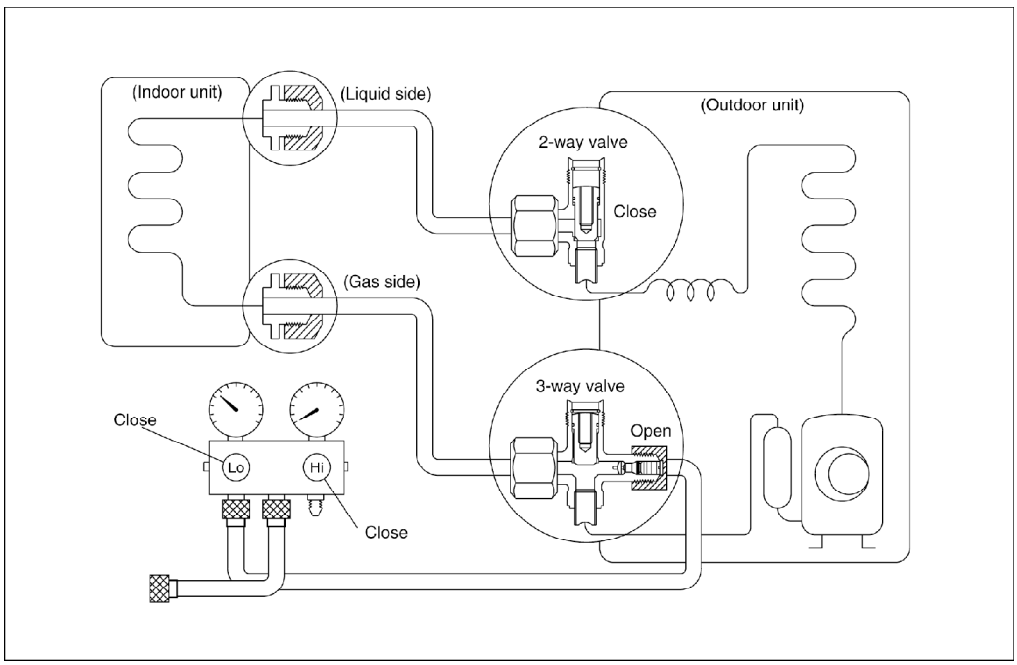
8. Check for gas leakage.

- At this time, especially check for gas leakage from the 2-way and 3-way's stem nuts, and from the service port cap.

Caution

If gas leakage is discovered in step (3) above, take the following measures:
If the leaks stop when the piping connections are tightened further, continue working from step (4).
If the gas leaks do not stop when the connections are retightened, repair the location of the leak, discharge all of the gas through the service port, and then recharge with the specified amount of gas from a gas cylinder.

11.2.2. Pumping down (Re-installation)



Procedure:

1. Confirm that both the 2-way and 3-way valves are set to the opened position.

- Remove the valve stem caps and confirm that the valve stems are in the opened position.
- Be sure to use a hexagonal wrench to operate the valve stems.

2. Operate the unit for 10 to 15 minutes.
3. Stop operation and wait for 3 minutes, then connect the charge set to the service port of the 3-way valve.

   - Connect the charge hose with the push pin to the Gas service port.

4. Air purging of the charge hose.

   - Open the low-pressure valve on the charge set slightly to purge air from the charge hose.

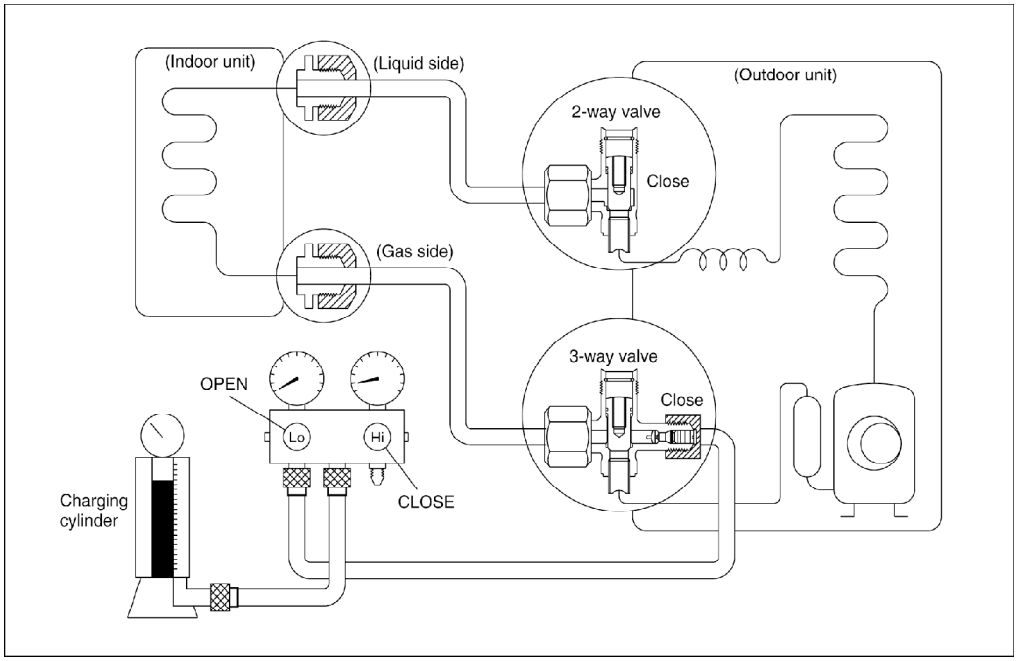
5. Set the 2-way valve to the close position.
6. Operate the air conditioner at the cooling cycle and stop it when the gauge indicates 1 kg/cm^{2}G (0.1 MPa).
7. Immediately set the 3-way valve to the closed position.

   - Do this quickly so that the gauge ends up indicating 3 to 5 kg/cm^{2}G (0.3 to 0.5 MPa).

8. Disconnect the charge set, and mount the 2-way and 3-way valve's stem nuts and the service port caps.

   - Use a torque wrench to tighten the service port cap to a torque of 1.8 kg.m (18 N.m).
   - Be sure to check for gas leakage.

11.2.3. Re-air purging (Re-installation)



Procedure:

1. **Confirm that both the 2-way and 3-way valves are set to the closed position.**
2. **Connect the charge set and a charging cylinder to the service port of the 3-way valve.**

   - Leave the valve on the charging cylinder closed.
3. **Air purging.**

   - Open the valves on the charging cylinder and the charge set. Purge the air by loosening the flare nut on the 2-way valve approximately 45° for 3 seconds then closing it for 1 minute; repeat 3 times.
   - After purging the air, use a torque wrench to tighten the flare nut on the 2-way valve.
4. **Check for gas leakage.**

   - Check the flare connections for gas leakage.
5. **Discharge the refrigerant.**

   - Close the valve on the charging cylinder and discharge the refrigerant until the gauge indicates 3 to 5 kg/cm^{2}G (0.3 to 0.5

MPa)

6. Disconnect the charge set and the charging cylinder, and set the 2-way and 3-way valves to the open position.

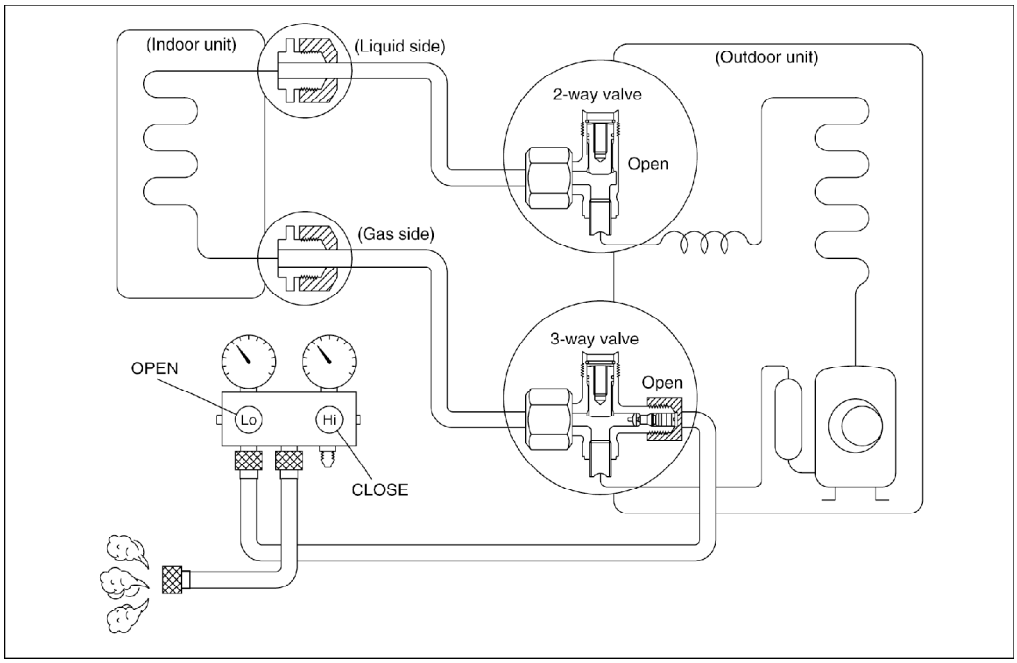
- Be sure to use a hexagonal wrench to operate the valve stems.

7. Mount the valve stem nuts and the service port cap.

- Be sure to use a torque wrench to tighten the service port cap to a torque 1.8 kg.m (18 N.m).
- Be sure to check for gas leakage.

11.2.4. Balance refrigerant of the 2-way, 3-way valves

(Gas leakage)



Procedure:

1. Confirm that both the 2-way and 3-way valves are set to the open position.

2. Connect the charge set to the 3-way valve's service port.

- Leave the valve on the charge set closed.
- Connect the charge hose with the push pin to the service port.

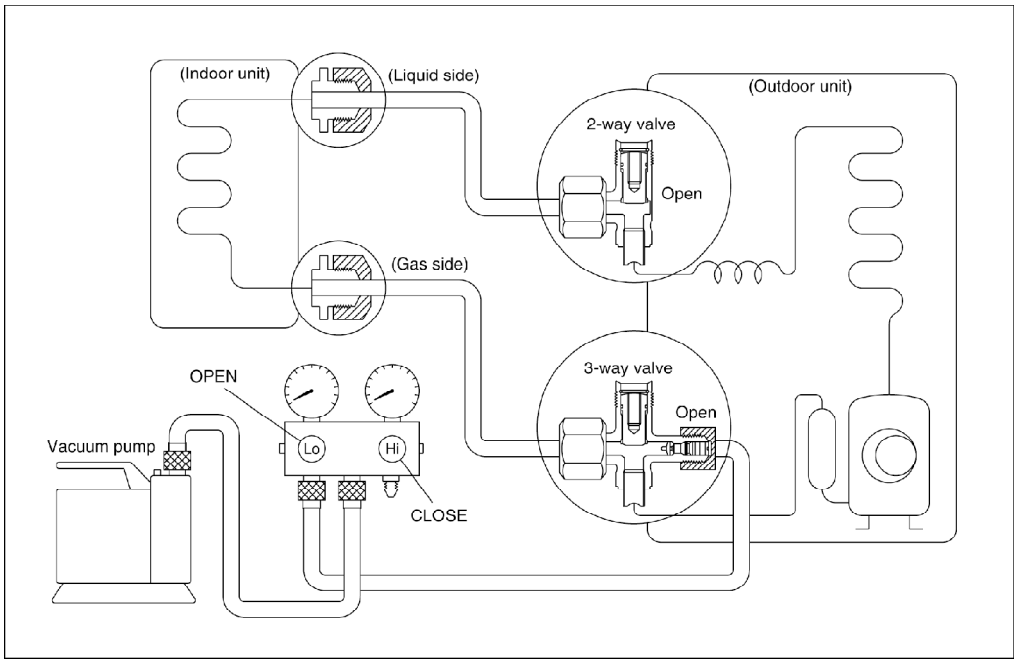
3. Open the valves (Low side) on the charge set and discharge the refrigerant until the gauge indicates 0.5 to 1 kg/cm^{2}G (0.05 to 0.1

MPa) .

- **If there is no air in the refrigeration cycle [the pressure when the air conditioner is not running is higher than 1 kg/cm2G (0.1 MPa)], discharge the refrigerant until the gauge indicates 0.5 to 1 kg/cm2G (0.05 to 0.1 MPa). If this is the case, it will not be necessary to apply a evacuation.**
- **Discharge the refrigerant gradually; if it is discharged too suddenly, the refrigeration oil will be discharged.**

11.2.5. Evacuation (Installation)

(No refrigerant in the refrigeration cycle)



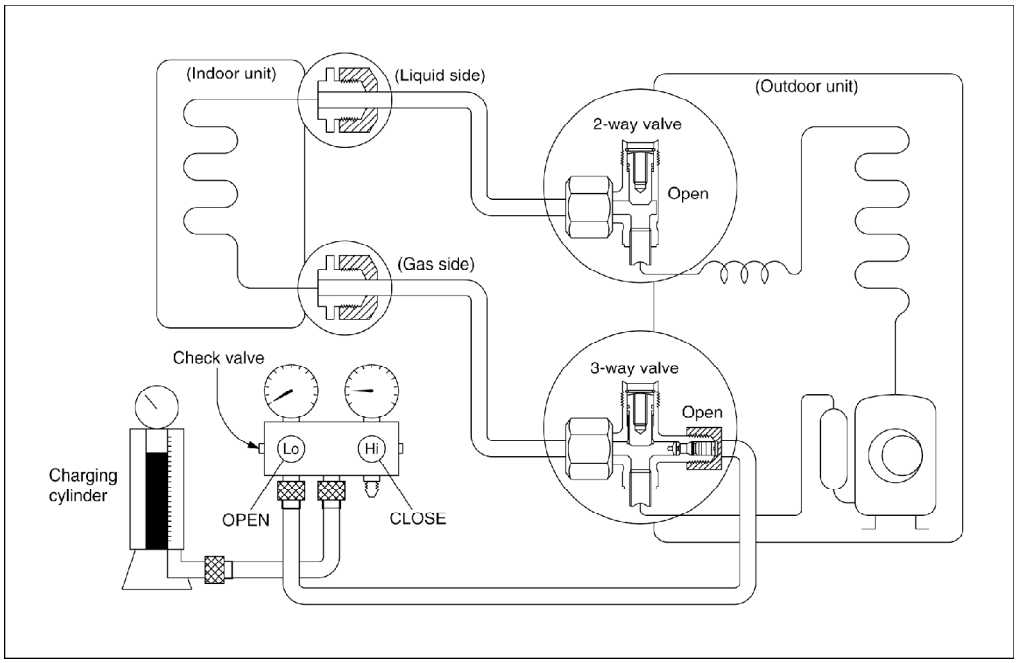
Procedure:

1. **Connect the vacuum pump to the charge set's centre hose.**
2. **Evacuation for approximately one hour.**
   - **Confirm that the gauge needle has moved toward -0.1 MPa (-76 cmHg) [vacuum of 4 mmHg or less.]**
3. **Close the valve (Low side) on the charge set, turn off the vacuum pump, and confirm that the gauge needle does not move (approximately 5 minutes after turning off the vacuum pump).**
4. **Disconnect the charge hose from the vacuum pump.**

- **Vacuum pump oil**
  If the vacuum pump oil becomes dirty or depleted, replenish as needed.

11.2.6. Gas charging

(After Evacuation)



Procedure:

1. Connect the charge hose to the charging cylinder.

- **Connect the charge hose which you disconnected from the vacuum pump to the valve at the bottom of the cylinder.**

2. Purge the air from the charge hose.

- **Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air (be careful of the liquid refrigerant).**

3. Open the valve (Low side) on the charge set and charge the system with liquid refrigerant.

- **If the system cannot be charged with the specified amount of refrigerant, it can be charged with a little at a time (approximately 150 g each time) while operating the air**

conditioner in the cooling cycle; however, one time is not sufficient, wait approximately 1 minute and then repeat the procedure. (pumping down-pin)

This is different from previous procedures. Because you are charging with liquid refrigerant from the gas side, absolutely do no attempt to charge with large amount of liquid refrigerant while operating the air conditioner.

4. Immediately disconnect the charge hose from the 3-way valve's service port.

   - Stopping partway will allow the refrigerant to be discharged.
   - If the system has been charged with liquid refrigerant while operating the air conditioner, turn off the air conditioner before disconnecting the hose.

5. Mount the valve stem caps and the service port cap.

   - Use torque wrench to tighten the service port cap to a torque of 18 N.m.
   - Be sure to check for gas leakage.

12. Servicing Information

12.1. Indoor Electronic Controllers Removal Procedures

1. The Electronic Controller, a Signal Receiver and an Indicator (Fig. 3) can be seen by the below steps:

   - Remove the 2 caps and 2 screws at the bottom of the Front Grille. (Fig. 1)

   - Remove the Front Grille by releasing the 2 hooks at the top of the Front Grille. (Fig. 1)

   - Remove the Control Board Cover by releasing the 2 tabs at left, 1 tab on top and 1 tab at right side of the Control Board Cover. (Fig. 2)

2. To remove the Electronic Controller:

- Release the Particular Piece. (Fig. 3)
- Release the hook that hold the Electronic Controller. (Fig. 3)

12.2. Indoor Fan Motor and Cross Flow Fan Removal Procedures

- Remove the Control Board by:-
- Releasing CN-REC/DISP connectors. (Fig. 4)
- Releasing CN-FM connectors. (Fig. 4)
- Releasing CN-STM connector. (Fig. 4)
- Removing the Earth Wire screw. (Fig. 4)
- Releasing the Intake Air Sensor. (Fig. 4)
- Releasing the Piping Sensor. (Fig. 4)

Fig. 1

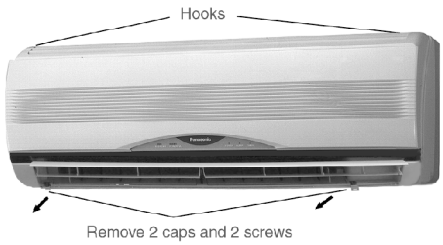


Fig. 2

Fig. 3

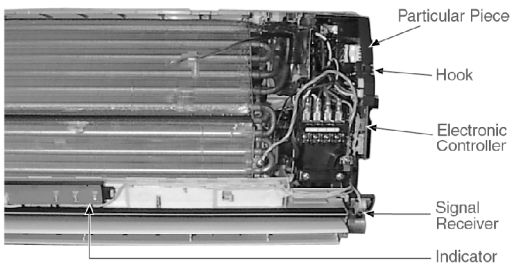
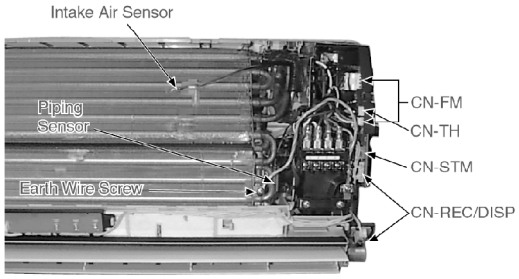


Fig. 4



- Pulling out the Drain Hose from outlet to remove the Discharge Grille. (Fig. 5)
- Removing the right and left screws. (Fig. 5)
- Then remove the Control Board by pressing down the hook at the left and pushing up the right hook. (Fig. 5)
- Release the Fan motor leadwire by pressing the hook at the center of the connector. (Fig. 6)
- Remove the screw at the Cross Flow Fan. (Fig. 7)
- REMINDER - To reinstall the Fan Motor, adjust the connector of the Fan Motor as shown in the Fig. 7.

Fig. 5

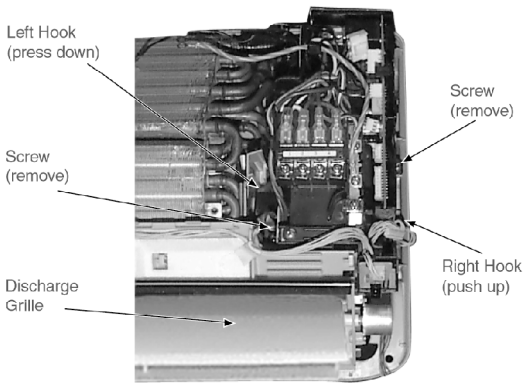


Fig. 6

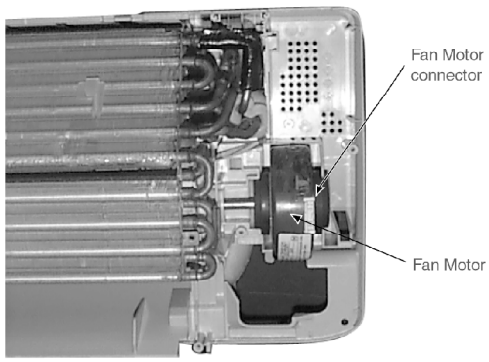
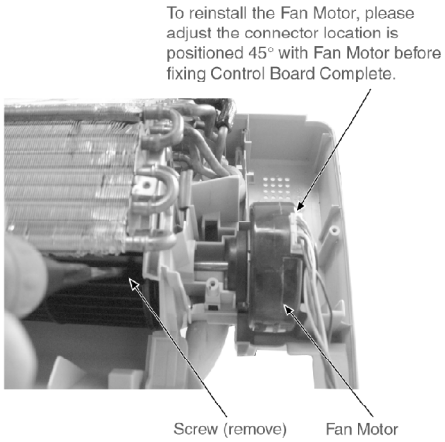


Fig. 7


To reinstall the Fan Motor, please adjust the connector location is positioned 45° with Fan Motor before fixing Control Board Complete.
Screw (remove)
Fan Motor

- Remove the screws at the left of the Evaporator. (Fig. 8)
- Remove the Bearing. (Fig. 9)
- Push up the Evaporator and pull out the Cross Flow Fan from shaft. By then, Fan Motor can be taken out. (Fig. 9)

Fig. 8

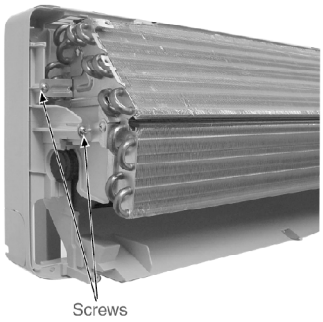
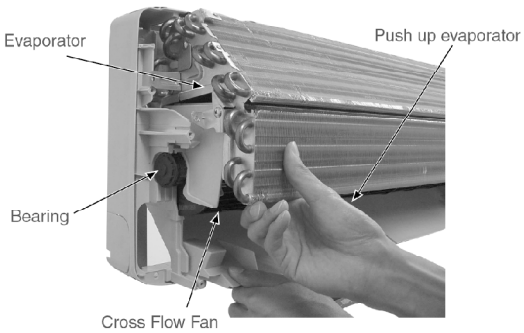


Fig. 9



- Remote Control Reset

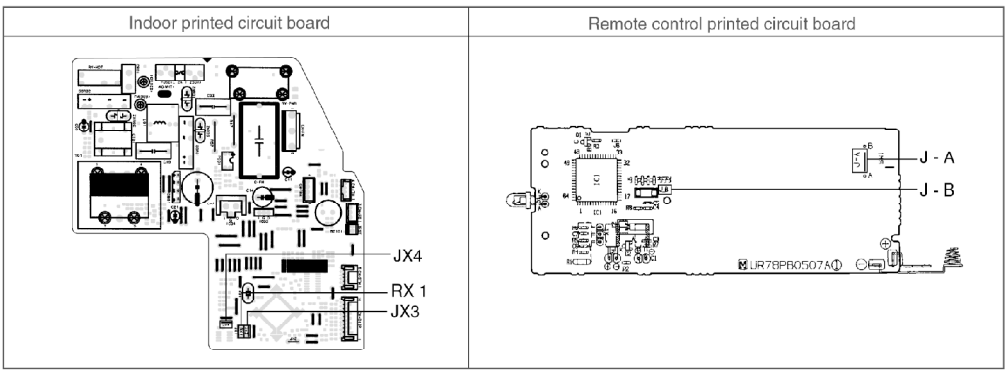
When the batteries are inserted for the first time, or the batteries are replaced, all the indications will blink and the remote control might not work.

If this happen, remove the cover of the remote control and you will find a resetting terminal, and by shorting it with a minus

screwdriver, it will return to normal.

- Changing the wireless remote control transmission code

When two indoor units are installed in the same room, in order to prevent operating errors caused by using two remote controls, cut a jumper wire at the remote control printed circuit board (J - A) and cut a jumper wire at the indoor printed circuit board (JX4). It is possible to select from 4 types of transmission codes including one at time of delivery condition (0).



	Remote control printed circuit board		Indoor printed circuit board			Note
	J - A	J - B	JX3	JX4	RX 1	
0	SHORT	OPEN	SHORT	SHORT	——	At product delivery
1	OPEN	OPEN	SHORT	OPEN	——	
2	SHORT	SHORT	OPEN	OPEN	10 KΩ	
3	OPEN	SHORT	SHORT	OPEN	10 KΩ	

13. Troubleshooting Guide

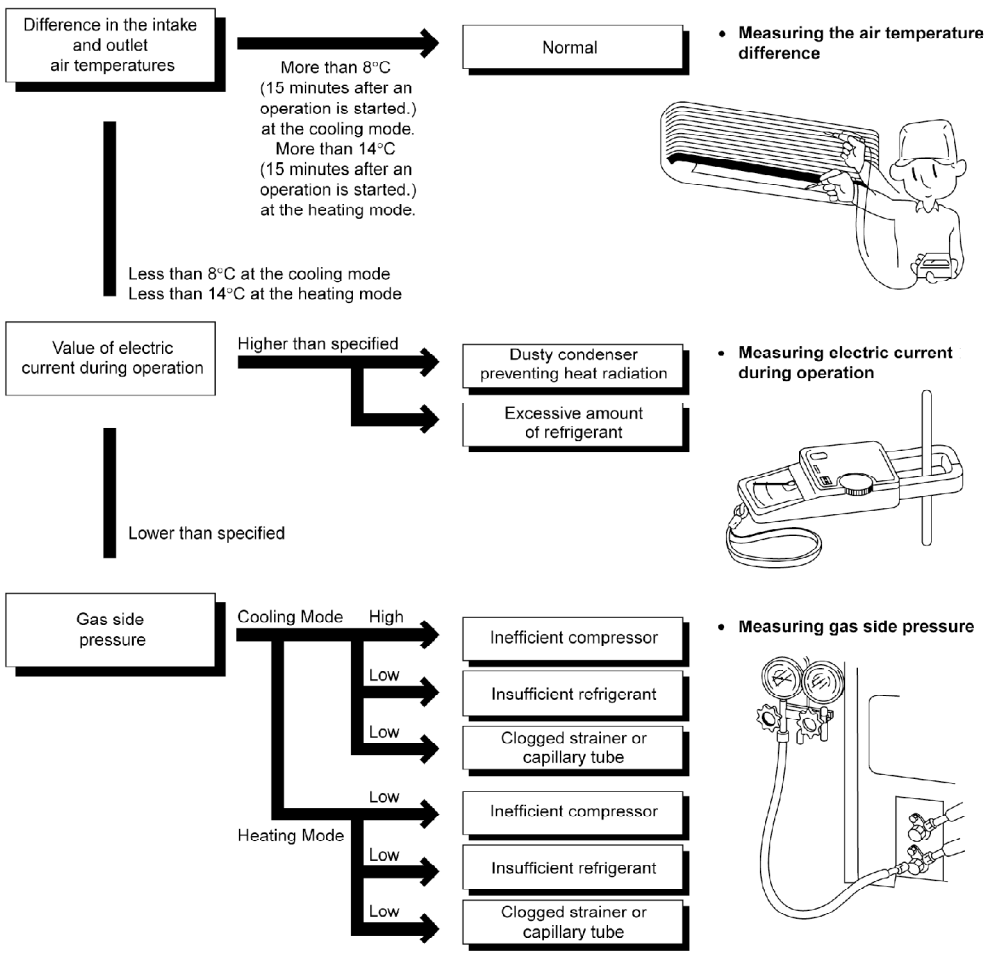
13.1. Refrigeration cycle system

In order to diagnose malfunctions, make sure that there are no electrical problems before inspecting the refrigeration cycle. Such problems include insufficient insulation, problem with the power source, malfunction of a compressor and a fan.
The normal outlet air temperature and pressure of the refrigeration cycle depends on various conditions, the standard values for them are shown in the table to the right.

Normal Pressure and Outlet Air Temperature (Standard)

	Gas pressure Mpa (kg/cm²G)	Outlet air temperature (°C)
Cooling Mode	0.4 ~ 0.6 (4 ~ 6)	12 ~ 16
Heating Mode	1.5 ~ 2.1 (15 ~ 21)	36 ~ 45

* Condition: Indoor fan speed; High
Outdoor temperature 35°C at the cooling mode and 7°C at the heating mode


Difference in the intake and outlet air temperatures
More than 8°C (15 minutes after an operation is started.) at the cooling mode.
More than 14°C (15 minutes after an operation is started.) at the heating mode.
Normal
Less than 8°C at the cooling mode
Less than 14°C at the heating mode
• Measuring the air temperature difference
Value of electric current during operation
Higher than specified
Dusty condenser preventing heat radiation
Excessive amount of refrigerant
Lower than specified
• Measuring electric current during operation
Gas side pressure
Cooling Mode
High
Low
Low
Low
Heating Mode
Low
Low
Inefficient compressor
Insufficient refrigerant
Clogged strainer or capillary tube
Inefficient compressor
Insufficient refrigerant
Clogged strainer or capillary tube
• Measuring gas side pressure

13.1.1. Relationship between the condition of the air conditioner and pressure and electric current

Condition of the air conditoner	Cooling Mode			Heating Mode		
	Low Pressure	High Pressure	Electric current during operation	Low Pressure	High Pressure	Ele cu du ope
Insufficient refrigerant (gas leakage)						
Clogged capillary tube or Strainer						
Short circuit in the indoor unit						
Heat radiation deficiency of the outdoor unit						
Inefficient compression						

- Carry out the measurements of pressure, electric current, and temperature fifteen minutes after an operation is started.

13.1.2. Diagnosis methods of a malfunction of a compressor and 4-way valve

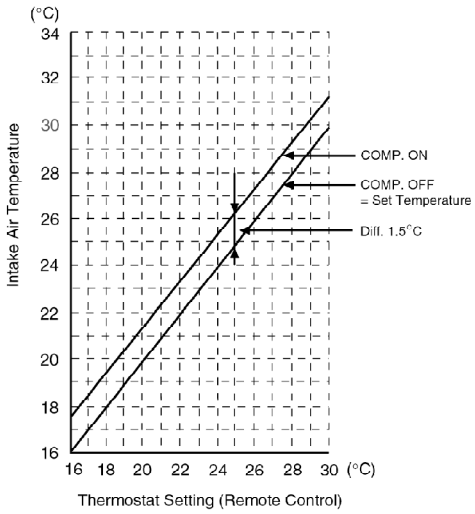
Nature of fault	Symptom
Insufficient compressing of a compressor	**-Electric current during operation becomes approximately 20% lower than the normal valu** **-The discharge tube of the compressor becomes abnormally hot (normally 70 to 90°C).** **-The difference between high pressure and low pressure becomes almost zero.**
Locked compressor	**-Electric current reaches a high level abnormally, and the value exceeds the limit of an am some cases, a breaker turns off.** **-The compressor is a humming sound.**
Insufficient switches of the 4-way valve	**-Electric current during operation becomes approximately 80% lower than the normal valu** **-The temperature different between from the discharge tube to the 4-way valve and from s to the 4-way valve becomes almost zero.**

14. Technical Data

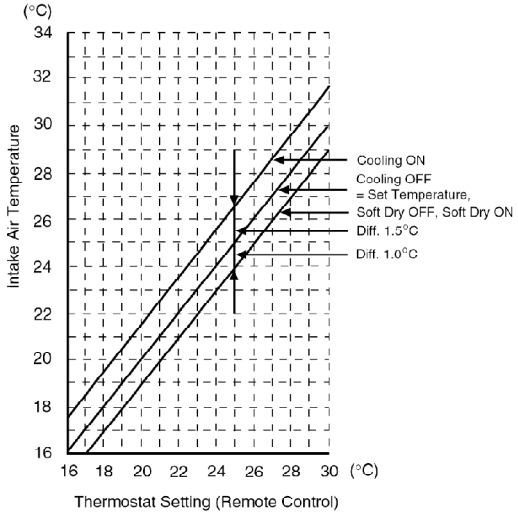
■ Thermostat characteristics

CS-A7BK / CS-A9BK / CS-A12BK

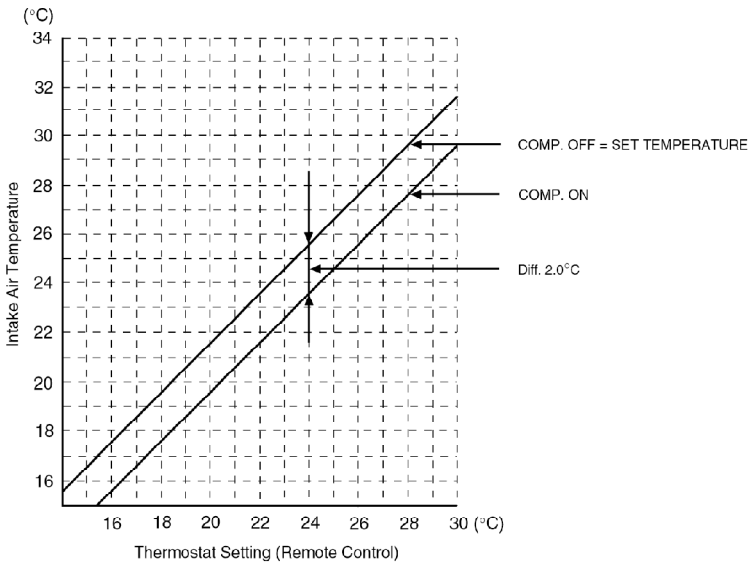
- **Cooling**



- **Soft Dry**



- **Heating**



■ Sensible Capacity Chart

- **CS-A7BK**

220V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	1.98	1.50	0.53	1.85	1.44	0.57	1.72	1.39	0.61	1.57	1.32	0.66
19.0°C				2.00		0.58						
19.5°C	2.18	1.57	0.54	2.04	1.51	0.58	1.89	1.46	0.62	1.72	1.39	0.67
22.0°C	2.37	1.63	0.55	2.22	1.57	0.59	2.06	1.51	0.63	1.88	1.44	0.68

230V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	2.03	1.54	0.55	1.90	1.48	0.59	1.77	1.42	0.63	1.61	1.35	0.68
19.0°C				2.05		0.60						
19.5°C	2.23	1.61	0.56	2.09	1.55	0.60	1.94	1.49	0.64	1.77	1.42	0.69
22.0°C	2.43	1.67	0.57	2.27	1.61	0.61	2.12	1.55	0.66	1.92	1.48	0.71

240V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	2.03	1.54	0.58	1.90	1.48	0.62	1.77	1.42	0.66	1.61	1.35	0.72
19.0°C				2.05		0.63						
19.5°C	2.23	1.61	0.59	2.09	1.55	0.63	1.94	1.49	0.68	1.77	1.42	0.73
22.0°C	2.43	1.67	0.60	2.27	1.61	0.64	2.12	1.55	0.69	1.92	1.48	0.74

- **CS-A9BK**

220V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	2.63	1.99	0.73	2.46	1.91	0.79	2.28	1.84	0.84	2.08	1.75	0.91
19.0°C				2.65		0.80						
19.5°C	2.89	2.09	0.75	2.70	2.00	0.80	2.51	1.93	0.86	2.28	1.84	0.93
22.0°C	3.15	2.16	0.76	2.94	2.08	0.82	2.73	2.01	0.87	2.49	1.91	0.94

230V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	2.68	2.03	0.76	2.50	1.95	0.82	2.33	1.87	0.87	2.12	1.78	0.94
19.0°C				2.70		0.83						
19.5°C	2.94	2.13	0.77	2.75	2.04	0.83	2.56	1.97	0.89	2.32	1.87	0.96
22.0°C	3.20	2.20	0.79	2.99	2.12	0.85	2.79	2.05	0.91	2.53	1.95	0.98

240V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	2.63	1.99	0.80	2.46	1.91	0.86	2.28	1.84	0.92	2.08	1.75	0.99
19.0°C				2.65		0.87						
19.5°C	2.89	2.09	0.81	2.70	2.00	0.87	2.51	1.93	0.93	2.28	1.84	1.01
22.0°C	3.15	2.16	0.83	2.94	2.08	0.89	2.73	2.01	0.95	2.49	1.91	1.03

- **CS-A12BK**

220V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	3.49	2.65	0.99	3.26	2.54	1.06	3.03	2.44	1.14	2.76	2.32	1.23
19.0°C				3.52		1.08						
19.5°C	3.83	2.77	1.01	3.58	2.66	1.08	3.33	2.56	1.16	3.03	2.44	1.25
22.0°C	4.18	2.87	1.03	3.90	2.76	1.10	3.63	2.67	1.18	3.30	2.54	1.27

230V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	3.57	2.71	1.03	3.34	2.60	1.10	3.10	2.49	1.18	2.82	2.37	1.27
19.0°C				3.60		1.12						
19.5°C	3.92	2.83	1.04	3.66	2.72	1.12	3.41	2.62	1.20	3.10	2.50	1.30
22.0°C	4.27	2.94	1.06	3.99	2.83	1.14	3.72	2.73	1.22	3.38	2.60	1.32

240V	Outdoor Temp. (°C)											
Indoor wet bulb temp.	30			35			40			46		
	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP	TC	SHC	IP
17.0°C	3.54	2.68	1.07	3.31	2.57	1.15	3.08	2.47	1.23	2.80	2.35	1.33
19.0°C				3.57		1.17						
19.5°C	3.89	2.81	1.09	3.63	2.70	1.17	3.38	2.60	1.26	3.07	2.47	1.35
22.0°C	4.24	2.92	1.11	3.96	2.80	1.20	3.68	2.70	1.28	3.35	2.58	1.38

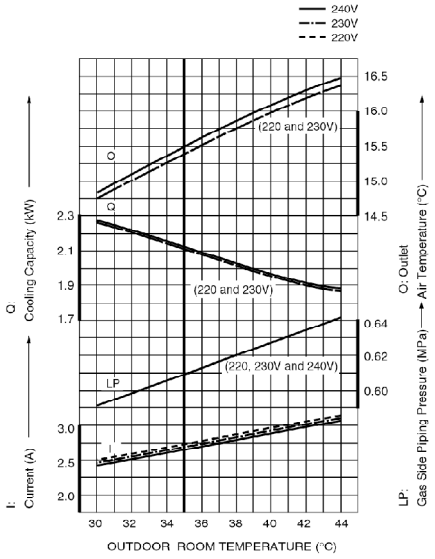
TC - Total Cooling Capacity (kW)
SHC - Sensible Heat Capacity (kW)
IP - Input Power (kW)

Indoor 27°C/19°C
Outdoor 35°C/24°C

■ Operation characteristics

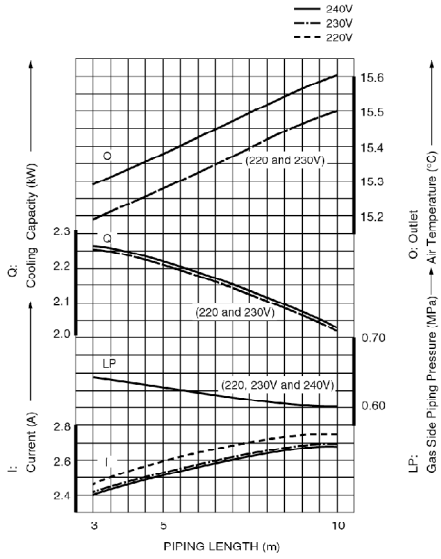
CS-A7BK / CU-A7BK

- **Cooling Characteristic**



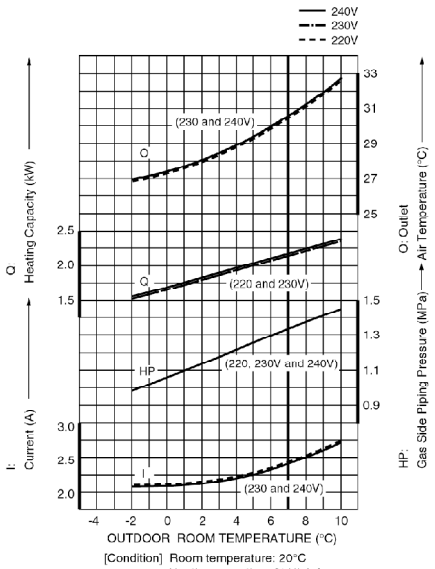
[Condition] Room temperature: 27/19°C
Cooling operation: At High fan
Piping length: 7.5 m

- **Piping Length Characteristic (Cooling)**



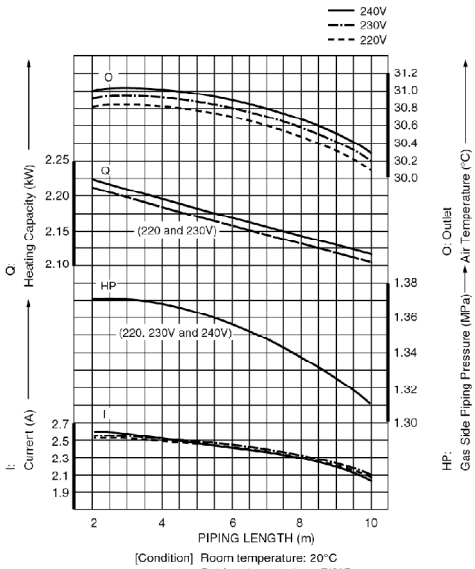
[Condition] Room temperature: 27/19°C
Outdoor temperature: 35/24°C
Cooling opeartion: At High fan

- **Heating Characteristic**



[Condition] Room temperature: 20°C
Heating operation: At High fan
Piping length: 7.5 m

- **Piping Length Characteristic (Heating)**

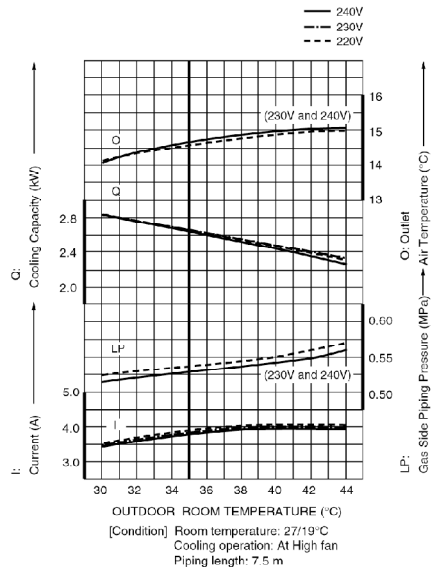


[Condition] Room temperature: 20°C
Outdoor temperature: 7/6°C
Heating opeartion: At High fan

■ Operation characteristics

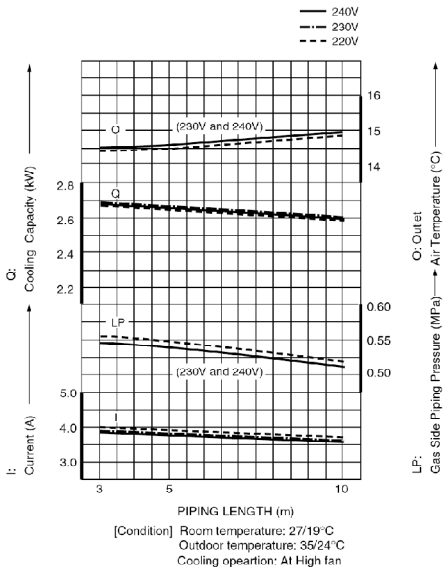
CS-A9BK / CU-A9BK

- **Cooling Characteristic**



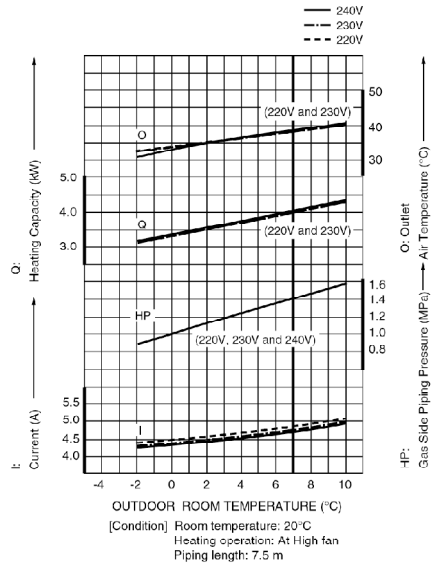
[Condition] Room temperature: 27/19°C
Cooling operation: At High fan
Piping length: 7.5 m

- **Piping Length Characteristic (Cooling)**



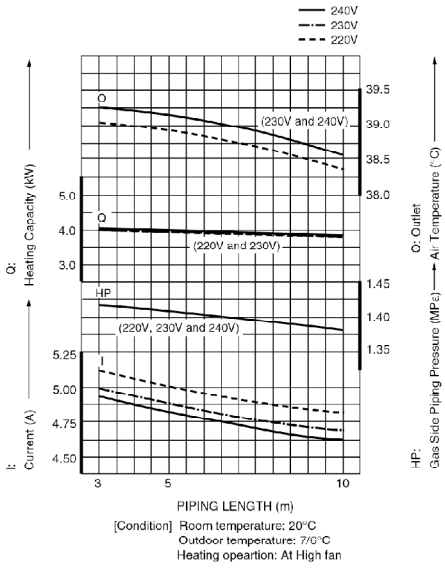
[Condition] Room temperature: 27/19°C
Outdoor temperature: 35/24°C
Cooling opeartion: At High fan

- **Heating Characteristic**



[Condition] Room temperature: 20°C
Heating operation: At High fan
Piping length: 7.5 m

- **Piping Length Characteristic (Heating)**

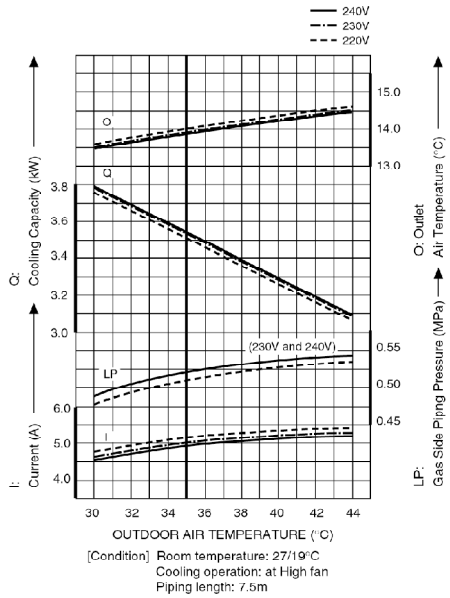


[Condition] Room temperature: 20°C
Outdoor temperature: 7/6°C
Heating opeartion: At High fan

■ Operation characteristics

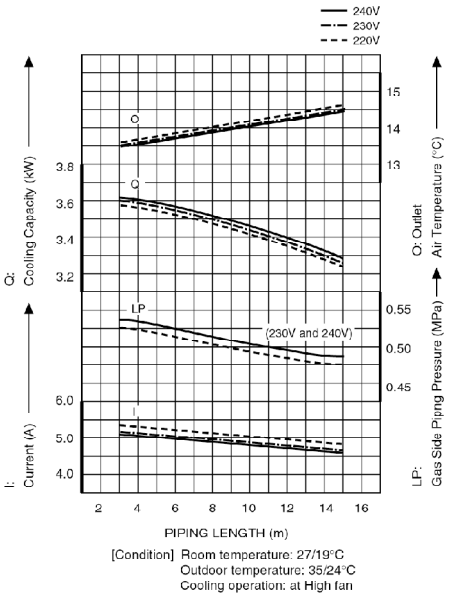
CS-A12BK / CU-A12BK

- **Cooling Characteristic**



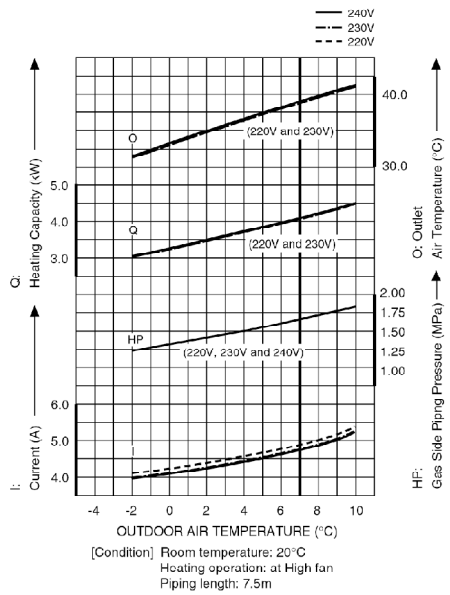
[Condition] Room temperature: 27/19°C
Cooling operation: at High fan
Piping length: 7.5m

- **Piping Length Characteristic (Cooling)**



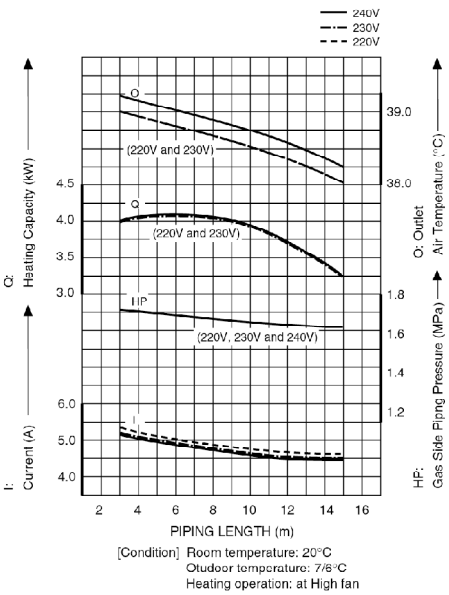
[Condition] Room temperature: 27/19°C
Outdoor temperature: 35/24°C
Cooling operation: at High fan

- **Heating Characteristic**



[Condition] Room temperature: 20°C
Heating operation: at High fan
Piping length: 7.5m

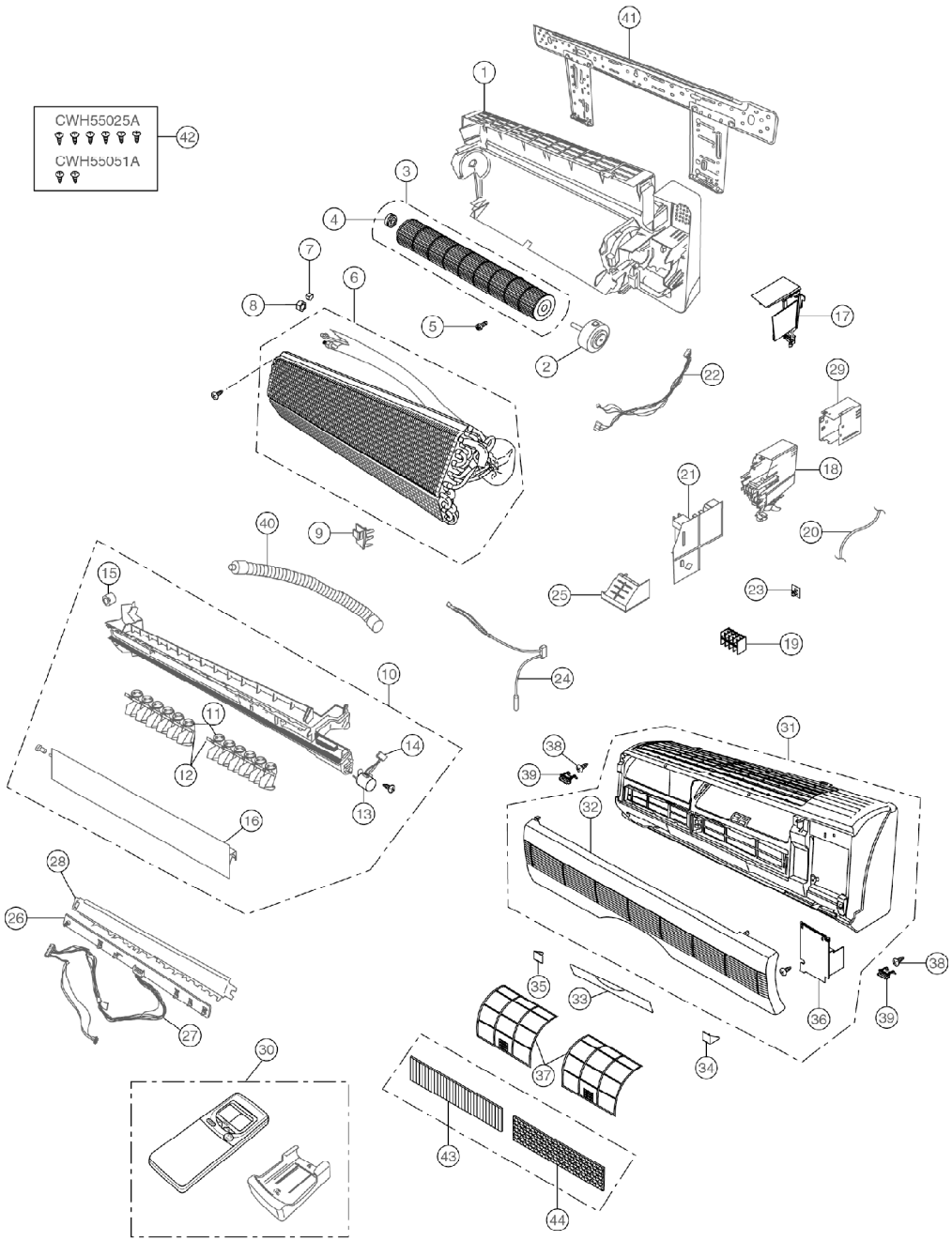
- **Piping Length Characteristic (Heating)**



[Condition] Room temperature: 20°C
Otudoor temperature: 7/6°C
Heating operation: at High fan

15. Exploded View

CS-A7BK / CS-A9BK / CS-A12BK



Note:
The above exploded view is for the purpose of parts disassembly and replacement.
The non-numbered parts are not kept as standard service parts.

16. Replacement Parts List

<Model: CS-A7BK / CS-A9BK / CS-A12BK>

REF. NO.	PART NAME & DESCRIPTION	QTY.		CS-A7BK	CS-A9BK	
1	CHASSY COMPLETE	1		CWD50C1177	←	
2	FAN MOTOR	1		CWA921060	←	
3	CROSS FLOW FAN COMPLETE	1		CWH02C1012	←	
4	BEARING ASS'Y	1		CWH64K007	←	
5	SCREW - CROSS FLOW FAN	1		CWH4580304	←	
6	EVAPORATOR	1		CWB30C1143	←	C
7	FLARE NUT	1		CWH6002140(1/4")	←	
8	FLARE NUT	1		CWT25005 (3/8")	←	CW
9	INTAKE AIR SENSOR HOLDER	1		CWH32142	←	
10	DISCHARGE GRILLE COMPLETE	1		CWE20C2101	←	
11	VERTICAL VANE	12		CWE241068	←	
12	CONNECTING BAR	2		CWE261024	←	
13	AIR SWING MOTOR	1		CWA98259	←	
14	LEAD WIRE - AIR SWING MOTOR	1		CWA67C3977	←	
15	CAP - DRAIN TRAY	1		CWH52C1001	←	
16	HORIZONTAL VANE	1		CWE241070	←	
17	PARTICULAR PIECE	1		CWD932162	←	
18	CONTROL BOARD	1	(1) (2) (3) (4)	CWH102103 CWH102103A - CWH102103	← ← CWH102103 ←	
19	TERMINAL BOARD COMPLETE	1		CWA28C2074	←	C
20	POWER SUPPLY CORD	1	(1) (2) (3) (4)	CWA20C2159 CWA20C2159 - CWA20C2159	← ← CWA20C2195 ←	
21	ELECTRONIC CONTROLLER - MAIN	1		CWA742634	CWA742633	C
22	LEAD WIRE - FAN MOTOR	1		CWA67C3729	←	
23	ELECTRONIC CONTROLLER - RECEIVER	1		CWA73C1124	←	
24	SENSOR COMPLETE	1		CWA50C608	←	
25	CONTROL BOARD FRONT COVER	1		CWH131090	←	
26	ELECTRONIC CONTROLLER - INDICATOR	1		CWE39C1042	←	
27	LEAD WIRE - INDICATOR	1		CWA67C3637	←	
28	INDICATOR HOLDER	1		CWD932163	←	
29	CONTROL BOARD TOP COVER	1		CWH131091	←	
30	REMOTE CONTROL COMPLETE	1		CWA75C2166	←	
31	FRONT GRILLE COMPLETE	1		CWE11C2329	←	
32	INTAKE GRILLE	1		CWE221036	←	
33	CONTROL PANEL	1		CWE312114	←	
34	DECORATION BASE (R)	1		CWE351067	←	

REF. NO.	PART NAME & DESCRIPTION	QTY.		CS-A7BK	CS-A9BK	
35	DECORATION BASE (L)	1		CWE351068	←	
36	GRILLE DOOR	1		CWE141033	←	
37	AIR FILTER	2		CWD001047	←	
38	SCREW - FRONT GRILLE	2		XTN4+16C	←	
39	CAP - FRONT GRILLE	2		CWH521062	←	
40	DRAIN HOSE	1		CWH85287	←	
41	INSTALLATION PLATE	1		CWH36K1006	←	
42	BAG COMPLETE - INSTALLATION SCREW	1		CWH82C067	←	
43	AIR PURIFYING FILTER	1		CWMD00C0001	←	
44	SOLAR DEODORIZING FILTER	1		CWMD00C0002	←	

(Note)

- All parts are supplied from MACC, Malaysia (Vendor Code: 086).

- “O” marked parts are recommended to be kept in stock.

- (1) — CS-A7BKP, CS-A9BKP, CS-A12BKP (Europe).

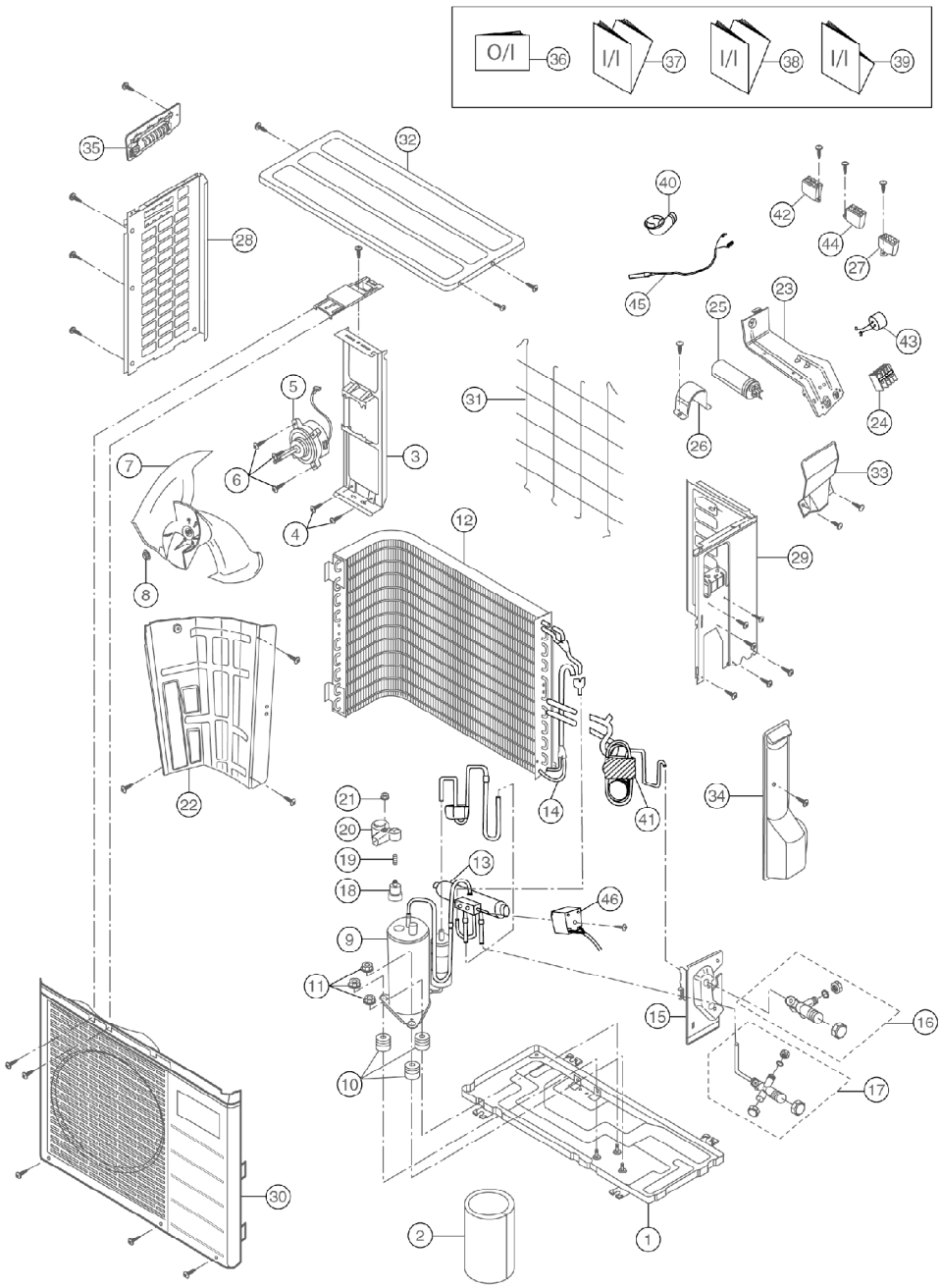
- (2) — CS-A7BKP-2, CS-A9BKP-2, CS-A12BKP-2 (Oceania).

- (3) — CS-A9BKP-3, CS-A12BKP-3 (Argentina).

- (4) — CS-A7BKP-6, CS-A9BKP-6, CS-A12BKP-6 (Turkey).

17. Exploded View

CU-A7BK / CU-A9BK / CU-A12BK



Note:
The above exploded view is for the purpose of parts disassembly and replacement.
The non-numbered parts are not kept as standard service parts.

18. Replacement Parts List

<Model: CU-A7BK / CU-A9BK / CU-A12BK>

REF. NO.	PART NAME & DESCRIPTION	QTY.		CU-A7BK	CU-A9BK	CU-A1
1	CHASSY ASS'Y	1		CWD50K2045A	←	CWD50K
2	SOUND PROOF MATERIAL	1		CWG302110	←	←
3	FAN MOTOR BRACKET	1		CWD541030	←	←
4	SCREW - FAN MOTOR BRACKET	2		CWH55413	←	←
5	FAN MOTOR	1		CWA951087	←	CWA95
6	SCREW - FAN MOTOR MOUNT	3		CWH55406	←	←
7	PROPELLER FAN ASS'Y	1		CWH03K1006	←	←
8	NUT - PROPELLER FAN	1		CWH56053	←	←
9	COMPRESSOR	1		2RS122D5BC02	2PS156D3BA02	QJ208
10	ANTI - VIBRATION BUSHING	3		CWH50077	←	CWH50
11	NUT - COMPRESSOR MOUNT	3		CWH56000	←	CWH45
12	CONDENSER	1		CWB32C1113	←	CWB32
13	4-WAY VALVE	1		CWB001012	←	CWB0
14	STRAINER	1		CWB11025	←	←
15	HOLDER COUPLING ASS'Y	1		CWH351015	←	←
16	2-WAY VALVE (LIQUID)	1		CWB021055	←	←
17	3-WAY VALVE (GAS)	1		CWB011061	←	CWB01
18	OVERLOAD PROTECTOR	1		CWA121050	CWA121051	CWA12
19	HOLDER - O.L.P.	1		CWH7041200	←	-
20	TERMINAL COVER	1		CWH171011	←	CWH17
21	NUT - TERMINAL COVER	1		CWH7080300	←	CWH56
22	SOUND PROOF BOARD	1		CWH151022	←	CWH15
23	CONTROL BOARD	1		CWH102102	←	←
24	TERMINAL BOARD ASS'Y	1		CWA28K216	←	←
25	CAPACITOR - COMPRESSOR	1		DS371206CPNA (20 μF, 370VAC)	DS371306CPNA (30 μF, 370VAC)	←
26	HOLDER CAPACITOR	1		CWH30057	←	←
27	CAPACITOR - FAN MOTOR	1		CWA31618 (2.0 μF, 450VAC)	←	←
28	CABINET SIDE PLATE (L)	1		CWE041031A	←	←
29	CABINET SIDE PLATE (R)	1		CWE041032A	←	CWE04
30	CABINET FRONT PLATE	1		CWE06K1034	←	←
31	WIRE NET	1		CWD041021A	←	CWD04
32	CABINET TOP PLATE	1		CWE031014A	←	←
33	PLATE - C. B. COVER	1		CWH131088	←	←
34	CONTROL BOARD COVER	1		CWH131092	←	←
35	HANDLE	1		CWE161010	←	←

REF. NO.	PART NAME & DESCRIPTION	QTY.		CU-A7BK	CU-A9BK	CU-A1
36	OPERATION INSTRUCTIONS	1	(1)	CWF563298	←	←
			(2)	CWF563353	←	←
			(3)	-		
			(4)	CWF563389	CWF563303	←
					←	←
37	INSTALLATION INSTRUCTIONS (ENGLISH, FRANCAIS, ESPANOL & DEUTSCH)	1	(1)	CWF612188	←	←
			(2)	CWF612188	←	←
			(3)	-		
			(4)	CWF612188	CWF612188	←
					←	←
38	INSTALLATION INSTRUCTIONS (ITALIANO, NEDERLANDS, PORTUGUES & GREEK)	1	(1)	CWF612189	←	←
			(2)	-	-	-
			(3)	-	-	-
			(4)	-	-	-
39	INSTALLATION INSTRUCTIONS (RUSSIA)	1	(1)	CWF612202	←	←
			(2)	-	-	-
			(3)	-	-	-
			(4)	-	-	-
40	L-TUBE	1		CWH5850080	←	←
41	TUBE ASS'Y (CHECK VALVE/CAPILLARY)	1		CWT01C2314	CWT01C2311	CWT01
42	ELECTRO MAGNETIC SWITCH	1		CWA00059	←	←
43	ELECTROLYTIC CAPACITOR	1		CWA32C067	←	←
44	ELECTRO MAGNETIC SWITCH	1		K6C2C7A00001	←	←
45	TEMPERATURE RELAY	1		CWA14C1001	←	←
46	V-COIL COMPLETE	1		CWA43C2069	←	CWA43

(Note)

- All parts are supplied from MACC, Malaysia (Vendor Code: 086).

- "O" marked parts are recommended to be kept in stock.

- (1) — CU-A7BKP5, CU-A9BKP5, CU-A12BKP5 (Europe).

- (2) — CU-A7BKP5-2, CU-A9BKP5-2, CU-A12BKP5-2 (Oceania).

- (3) — CU-A9BKP5-3, CU-A12BKP5-3 (Argentina).

- (4) — CU-A7BKP5-6, CU-A9BKP5-6, CU-A12BKP5-6 (Turkey).

19. Electronic Parts List

<Electronic Controller Part No.: CWA742634, CWA742633 & CWA742470>

SYMBOL	DESCRIPTION & NAME	PART NO.
BZ101	SOUND GENERATOR	A48040
C-FM	SH CAPACITOR	A31698
CR01	SURGE ABSORBER	J0HBJY000003
CT01	TRANSFORMER	A40322
D08, D10, D11	DIODE	B0ACCK000005 (CWA742634 & CW only)
D13	DIODE	B0ACCK000005
D14	DIODE	A54RB501V-40
DB01	DIODE	A54CS1VB20E
FUSE	FUSE	XBA2C20TR0
FUSE HOLDER 01, 02	FUSE HOLDER	XCSCW012
IC01	INTEGRATED CIRCUIT	A52D0022GB34
IC02	INTEGRATED CIRCUIT	C3EBDG000021
IC03	INTEGRATED CIRCUIT	A52C040
IC04	INTEGRATED CIRCUIT	A52C114
IC05	INTEGRATED CIRCUIT	A52A2003GR2
L01	V-COIL	A431036
PC01	PHOTO COUPLER	A52LP620-G4
Q01, Q02, Q03	TRANSISTOR	B1GBCFGH0001
Q04, Q05, Q06	TRANSISTOR	A55C2412KTX
RY-HOT	ELECTRO MAGNETIC RELAY	A00208
RY-PWR	ELECTRO MAGNETIC RELAY	K6B1AGA00077
SSR01, SSR02	TYRISTOR	A56G3MC202PL
T01	TRANSFORMER	A401030
X01	RESONATOR	A45CSTS409MG
ZD1	DIODE	B0BC7R400003
ZNR01, ZNR02, ZNR03	DIODE	ERZVEAV511

(Note)

- All parts are supplied from MACC, Malaysia (Vendor Code: 086)

20. Electronic Circuit Diagram

Fig. 1

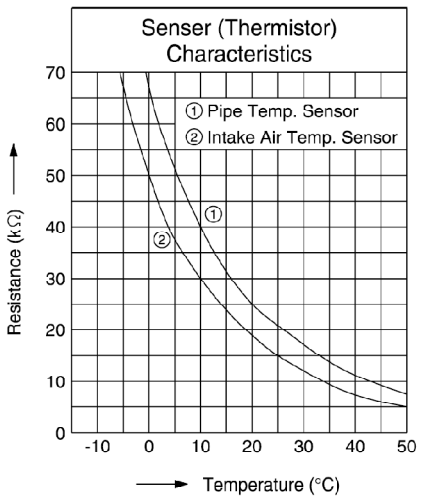


Fig. 2

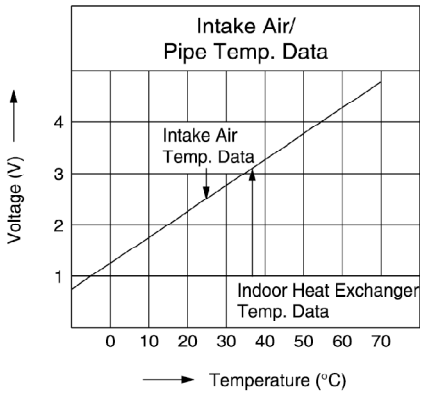
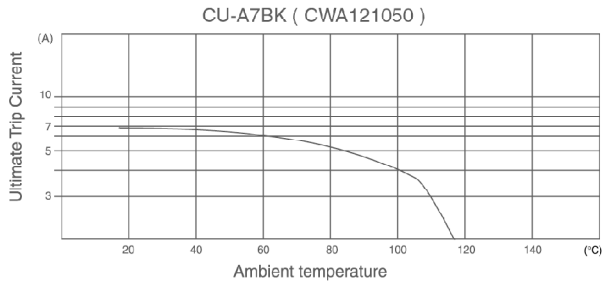
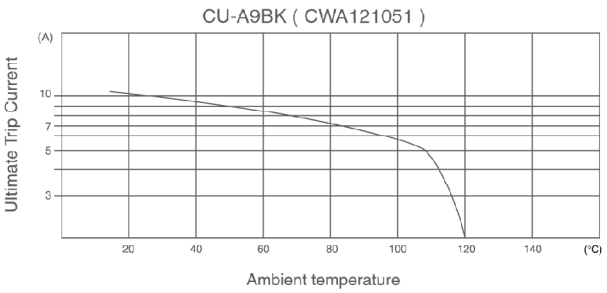
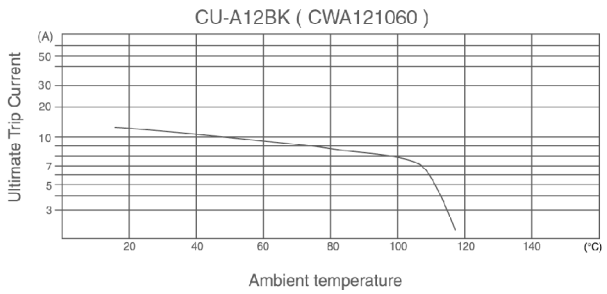


Fig. 3 OLP Characteristics (Compressor)







How to use electronic circuit diagram

Before using the circuit diagram, read the following carefully.

* Voltage measurement
  Voltage has been measured with a digital tester when the indoor fan is set at high fan speed under the following conditions without setting the timer. Use them for servicing.
  Voltage indication is in Red at all operations.

	Intake air temperature	Temperature setting	Discharge air temperature	Pipe temperature
Cooling	27°C	16°C	17°C	15°C

* Indications for resistance
  a. K....kΩ M....MΩ
  W...watt Not indicated....1/4W
  b. Type
  Not indicated.....carbon resister
  Tolerance±5%
  .....metal oxide resister
  Tolerance±1%

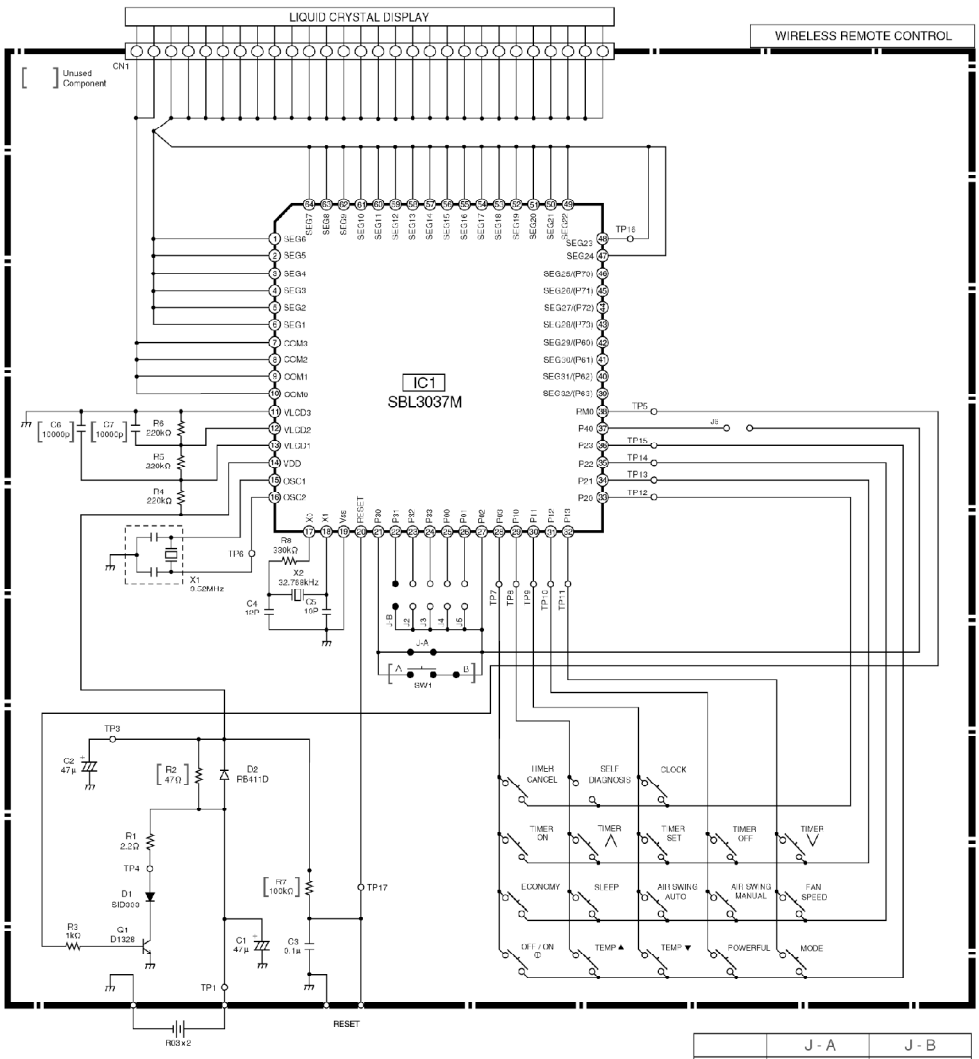
* Indications for capacitor
  a. Unit μ....μF P....pF
  b. Type Not indicated....ceramic capacitor
  (S).....S series aluminium electrolytic capacitor
  (Z).....Z series aluminium electrolytic capacitor
  (SU).....SU series aluminium electrolytic capacitor
  (P).....P series polyester system
  (SXE).....SXE series aluminium electrolytic capacitor
  (SRA).....SRA series aluminium electrolytic capacitor
  (KME).....KME series aluminium electrolytic capacitor
* Diode without indication.....MA165
× Circuit Diagram is subject to change without notice for further development.

TIMER TABLE

Name		Time	Test Mode (When test point Short-circuited)	Remarks
Sleep Mode Waiting		1 hr.	6 sec.	
Sleep Mode Operation		8 hrs.	48 sec.	
Real Timer		1 hr.	1 min.	
		10 min.	10 sec.	
		1 min.	1 sec.	
Time Delay Safety Control		2 min. 58 sec.	0 sec.	
Forced Operation		60 sec.	0 sec.	
Time Save Control		7 min.	4.2 sec.	
Anti-Freezing		4 min.	0 sec.	
Auto Mode Judgement		25 sec.	0 sec.	
Soft Dry	OFF	6 min.	36 sec.	
	ON	10 min.	60 sec.	Soft Dry: 10 min. operation
Deodorizing Control	Cooling	40 sec.	4 sec.	
		70 sec.	7 sec.	
		20 sec.	2 sec.	
		180 sec.	18 sec.	
	Soft Dry	40 sec.	4 sec.	
		360 sec.	36 sec.	
Comp. Reverse Rotation Detection		5 min.	30 sec.	Comp. ON 5 min. and above
		2 min.	0 sec.	
Comp./ Fan Motor Delay Timer		1.6 sec.	0 sec.	
Powerful Mode Operation		15 min.	15 sec.	
Random FM Timer (Economy Mode)		5 sec.	5 sec.	
Random Auto Restart Control		0 ~ 62 sec.	0 ~ 6.2 sec.	

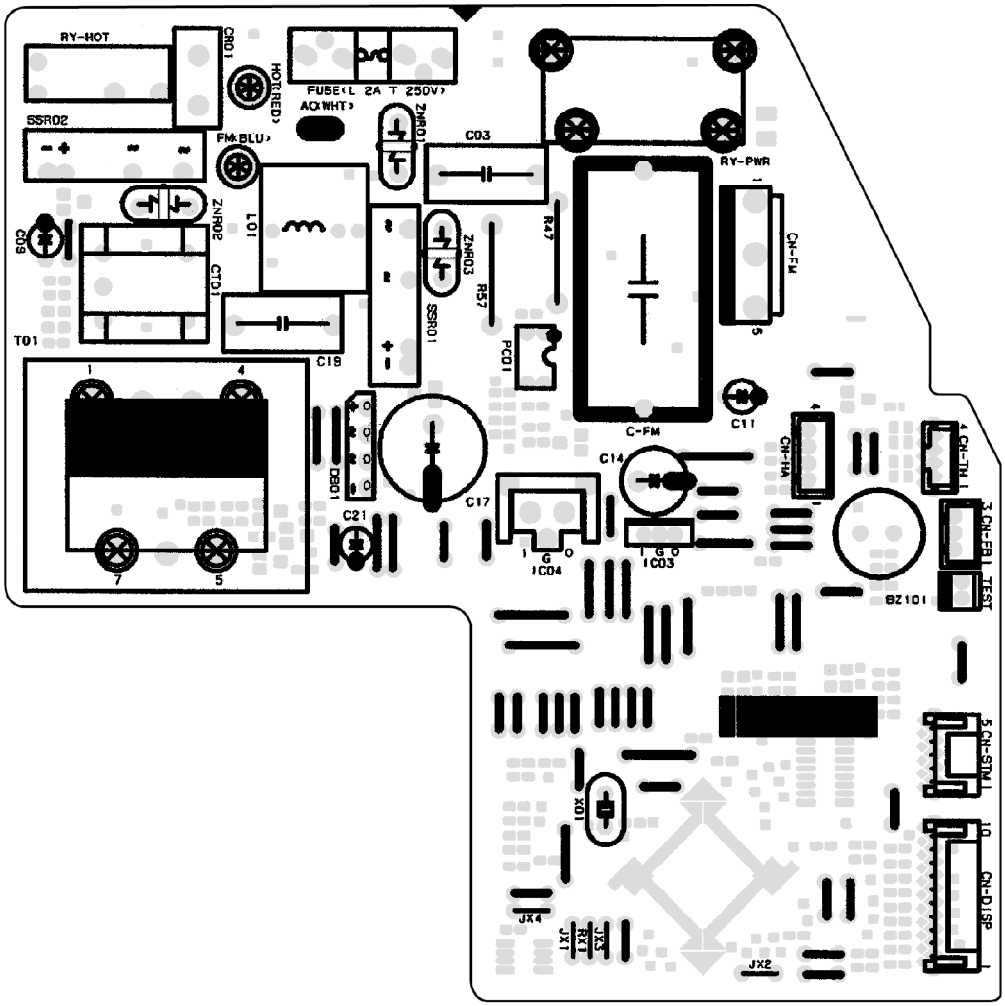
TRS Recovery Detection	**12 min.**	**72 sec.**	
	6 min.	**36 sec.**	
	3 min.	**18 sec.**	
	1 min.	**6 sec.**	
Time Save Control (Heating)	**30 min.**	**3 sec.**	
4 Way Valve Control (Delay)	**5 min.**	**30 sec.**	
Deice Operation Occurs	**60 min.**	**6 sec.**	**60 min. after previous deice**
	4 min.	**24 sec.**	**Continuously 4 min. Comp. ON**
	50 sec.	**0 sec.**	**TRS ON continuously for 50 sec. check**
Overload Deice Timer	**1 min.**	**6 sec.**	**Comp. ON continuously for 1 min. check**
Deice End	**12 min.**	**72 sec.**	**Max. Operation time**
	30 sec.	**3 sec.**	**30 sec. Comp. OFF after deice**
	10 sec.	**1 sec.**	**4-Way Valve ON 10 sec. later after deice**
Deice Operation (Extend)	**60 sec.**	**0 sec.**	
	120 sec.	**0 sec.**	
	180 sec.	**0 sec.**	
Hotstart Finish	**30 sec.**	**0 sec.**	

20.1. REMOTE CONTROL / /

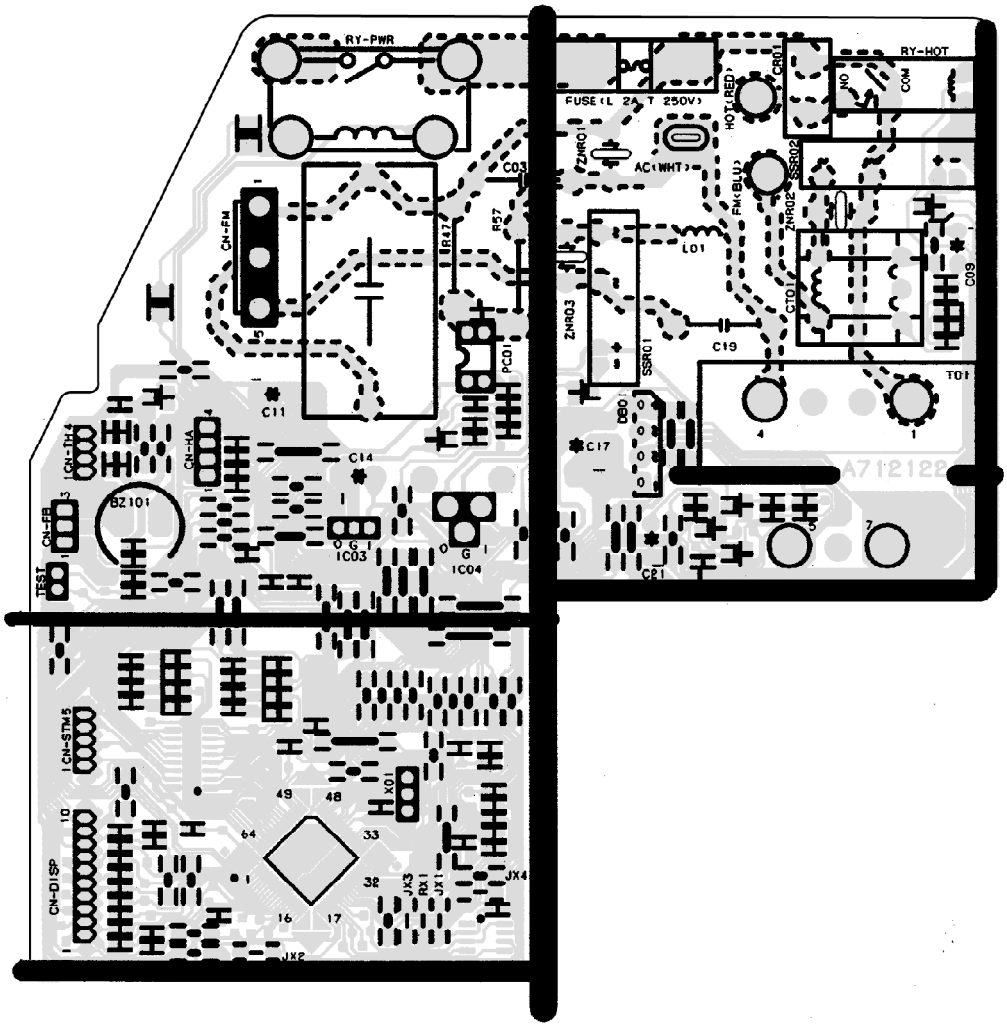


	J - A	J - B
0	SHORT	OPEN
1	OPEN	OPEN
2	SHORT	SHORT
3	OPEN	SHORT

20.2. PRINT PATTERN / INDOOR UNIT PRINTED CIRCUIT BOARD / / / TOP VIEW



20.3. PRINT PATTERN / INDOOR UNIT PRINTED CIRCUIT BOARD / / / BOTTOM VIEW



[MACC] Printed in Malaysia /

SAFETY PRECAUTIONS

Before operating, please read the following "Safety Precautions" carefully.

- To prevent personal injury, injury to others and property damage, the following instructions must be followed.
- Incorrect operation due to failure to follow instructions will cause harm or damage, the seriousness of which is classified as follow:

⚠ Warning
This sign warns of death or serious injury.

⚠ Caution
This sign warns of damage to property.

- The instructions to be followed are classified by the following symbols:

This symbol (with a white background) denotes an action that is PROHIBITED.

These symbols (with a black background) denote actions that are COMPULSORY.

■ Installation Precautions

⚠ Warning

- **Do not install, remove and reinstall the unit by yourself.**
  Improper installation will cause leakage, electric shock or fire. Please engage an authorized dealer or specialist for the installation work.

⚠ Caution

- **This room air conditioner must be earthed.**
  Improper grounding could cause electric shock.
- **Ensure that the drainage piping is connected properly.**
  Otherwise, water will leak out.
- **Do not install the unit in a potentially explosive atmosphere.**
  Gas leak near the unit could cause fire.

■ Operation Precautions

⚠ Warning
This sign warns of death or serious injury.

- Do not share outlet.
- Do not insert plug to operate the unit. Do not pull out plug to stop the unit.
- Do not operate with wet hands.
- Do not damage or modify the power cord.
- Do not insert finger or other objects into the indoor or outdoor units.
- Do not expose directly to cold air for a long period.

- Plug in properly.
- Use specified power cord.

- If abnormal condition (burnt smell, etc.) occurs, switch off and unplug the power supply.

⚠ Caution
This sign warns of injury.

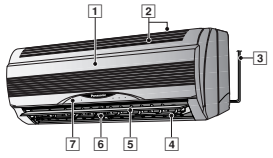
- Do not pull the cord to disconnect the plug.
- Do not wash the unit with water.
- Do not use for other purposes such as preservation.
- Do not use any combustible equipment at airflow direction.
- Do not sit or place anything on the outdoor unit.

- Switch off the power supply before cleaning.
- Ventilate the room regularly.
- Pay attention as to whether the installation rack is damaged after long period of usage.

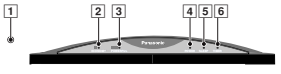
- Switch off the power supply if the unit is not used for a long period.

NAME OF EACH PART

■ Indoor Unit

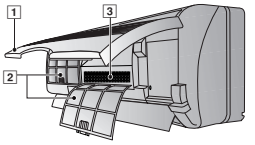


1 Front Panel
2 Air Intake Vent
3 Power Supply Cord
4 Air Outlet Vent
5 Vertical Airflow Direction Louver
6 Horizontal Airflow Direction Louver (manually adjusted)
7 Indicator Panel



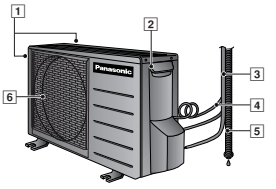
1 Auto Operation Button (when the front panel is opened)
2 Economy Mode Indicator – GREEN
3 Powerful Mode Indicator – ORANGE
4 Power Indicator – GREEN
5 Sleep Mode Indicator – ORANGE
6 Timer Mode Indicator – ORANGE

- **Indoor Unit**
  (when the front panel is opened)



1 Front Panel
2 Air Filters
3 Air Purifying Filter

■ Outdoor Unit

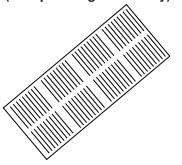


1 Air Intake Vents
2 Ground Terminal (Inside cover)
3 Piping
4 Connecting Cable
5 Drain Hose
6 Air Outlet Vents

■ Accessories

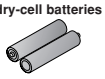
- **Remote Control**

- **Remote Control Indication Sticker (Europe & Argentina only)**

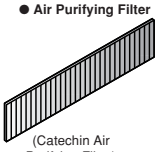


- **Remote Control Holder**

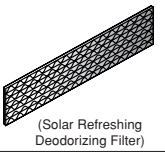
- **Two RO3 (AAA) dry-cell batteries or equivalent**



- **Air Purifying Filter**



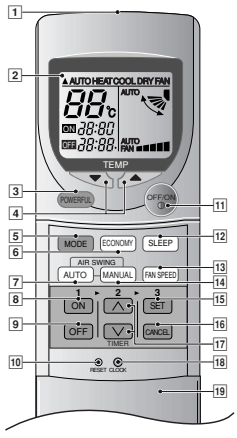
(Catechin Air Purifying Filter)



(Solar Refreshing Deodorizing Filter)

NAME OF EACH PART

■ Remote Control



1 Signal Transmitter

2 Operation Display

3 Powerful Mode Operation Button

4 Room Temperature Setting Button (self-illuminating button)

5 Operation Mode Selection Button

6 Economy Mode Operation Button

7 Auto Airflow Direction Button

8 ON-Timer Button

9 OFF-Timer Button

10 Reset Point (Press with fine-tipped object to clear the memory)

11 OFF/ON Button (self-illuminating button)

12 Sleep Mode Operation Button

13 Fan Speed Selection Button

14 Manual Airflow Direction Selection Button

15 Timer Set Button

16 Timer Cancellation Button

17 Time-Setting Button

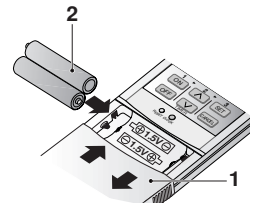
18 Clock Button

19 Remote Control Cover

● **Remote Control Signal.**
- Make sure it is not obstructed.
- Maximum distance : 10 m.
- Signal received sound.
  One short beep or one long beep.

● **Notes for Remote Control.**
- Do not throw or drop.
- Do not get it wet.
- Certain type of fluorescent lamps may affect signal reception. Consult your dealer.

● **How to Insert the Batteries**



1 Slide down the remote control cover completely

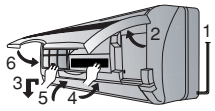
2 Insert the batteries
– Be sure the direction is correct
– 12.00 at display - flashing
• Set the current time (CLOCK) immediately to prevent battery exhaustion.

● **About the batteries**
• Can be used for approximately one year.

● **Observe the following when replacing the batteries**
• Replace with new batteries of the same type.
• Do not use rechargeable batteries (Ni-Cd).
• Remove the batteries if the unit is not going to be used for a long period.

PREPARATION BEFORE OPERATION

■ Indoor Unit



1 Connect the power supply cord to an independent power supply

2 Open the front panel

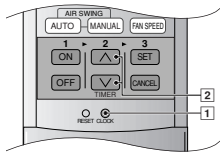
3 Remove the air filters

4 Fit the air purifying filters in place

5 Insert the air filters

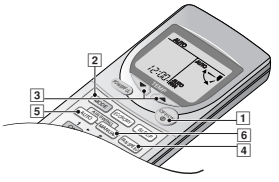
6 Close the front panel

■ Remote Control
– To set the current time



1 Press [1].
2 Then press [2] to increase or decrease the time.
3 Press [1] again.
Set time at display will light up.

HOW TO OPERATE



■ To start the operation
• Press [1].
• POWER indicator (green) on the indoor unit will light up.
• To stop, press once more.

■ Setting Mode
• Press [2] to select:-

Cooling Model

AUTO – Automatic Operation
COOL – Cooling Operation
DRY – Soft Dry Operation
FAN – Air Circulation Operation

Heat Pump Model

AUTO – Automatic Operation
HEAT – Heating Operation
COOL – Cooling Operation
DRY – Soft Dry Operation

■ Setting Temperature
• Press [3] to increase or decrease the temperature.
• The temperature can be set between 16°C ~ 30°C.
• Recommended temperature:

Cooling Model	Heat Pump Model
COOL – 26°C ~ 28°C	COOL – 26°C ~ 28°C
DRY – 1°C ~ 2°C lower than the room temperature	DRY – 1°C ~ 2°C lower than the room temperature
	HEAT – 20°C ~ 24°C

• During **AUTO** Operation, press [3] to select:-

AUTO Hi • Operation with 2°C higher than the standard temperature.

AUTO • Operation with the standard temperature.

AUTO Lo • Operation with 2°C lower than the standard temperature.

● **Standard Temperature**

Cooling Model

Indoor temperature	Operation	Standard temperature
23°C	Cooling	25°C
	Soft Dry	22°C

• Once the Automatic Operation is selected, the indoor temperature sensor operates automatically to select the desired operation mode with Cooling or Soft Dry.
• After the operation mode has been selected, the mode does not change.

Heat Pump Model

Indoor temperature	Operation	Standard temperature
23°C	Cooling	25°C
	Soft Dry	22°C
20°C	Heating	21°C

• At the beginning of the automatic operation, Heating, Cooling or Soft Dry is automatically selected according to the indoor temperature.
• The operation mode changes every hour, when necessary.

■ Setting the Fan Speed

- Press [4] to select:-

FAN – Low Fan Speed
FAN – Medium Fan Speed
FAN – High Fan Speed
AUTO FAN – Automatic Fan Speed
The speed of the indoor fan is adjusted automatically according to the operation. The indoor fan stops occasionally during cooling operation.

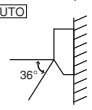
■ Setting the Vertical Airflow Direction

- Press [5] or [6] to select:-

Cooling Model

COOL / DRY Operation

AUTO

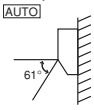


Swing up/down Automatically

MANUAL
Five stages of adjustment can be made between 14° ~ 36°.

FAN Operation

AUTO



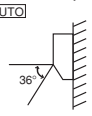
Swing up/down Automatically

MANUAL
Five stages of adjustment can be made between 0° ~ 61°.

Heat Pump Model

COOL / DRY Operation

AUTO



Swing up/down Automatically

MANUAL
Five stages of adjustment can be made between 14° ~ 36°.

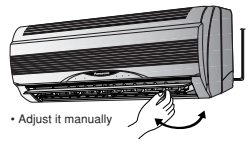
HEAT Operation

AUTO

– When the discharge air temperature is low such as at the start of heating operation, the air blows at horizontal level. As the temperature rises, the hot air blows at a downward direction.
– To stop this op-eration, press MANUAL.

MANUAL
Five stages of adjustment can be made between 0° ~ 61°.

■ Setting the Horizontal Airflow Direction



• Adjust it manually

● Use this air conditioner under the following conditions:

Cooling Model

Unit in °C

DBT: Dry Bulb Temp WBT: Wet Bulb Temp	Indoor		Outdoor	
	DBT	WBT	DBT	WBT
Maximum Temperature	32	23	43	26
Minimum Temperature	16	11	16	11

Heat Pump Model

Unit in °C

DBT: Dry Bulb Temp WBT: Wet Bulb Temp	Indoor		Outdoor	
	DBT	WBT	DBT	WBT
Maximum Temperature-Cooling (Maximum Temperature-Heating)	32 (30)	23 (-)	43 (24)	26 (18)
Minimum Temperature-Cooling (Minimum Temperature-Heating)	16 (16)	11 (-)	16 (-5)	11 (-6)

● Notes

- If the unit is not going to be used for an extended period of time, turn off the main power supply. If it is left at the ON position, approximately 2.5 W of electricity will be used even if the indoor unit has been turned off with the remote control.
- If operation is stopped, then restart immediately, the unit will resume operation only after 3 minutes.

● Operation Details

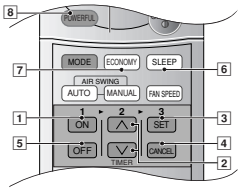
COOL – Cooling Operation
- To set the room temperature at your preference cooling comfort.

AUTO – Automatic Operation
- Sense indoor temperature to select the optimum mode.
- Temperature is not displayed on the remote control during AUTO operation.

DRY – Soft Dry Operation
- A very gentle Cooling Operation, prior to dehumidification. It does not lower the room temperature.
- During Soft Dry operation, the indoor fan operates at Low fan speed.

HEAT – Heating Operation
(for Heat Pump Model only)
- Heat is obtained from outdoor air to warm up the room. When the outdoor ambient air temperature falls, the heating capacity of the unit might be reduced.
- Defrosting Operation
  Depend on the outdoor temperature, the operation occasionally stops to melt the frost on the outdoor unit.

FAN – Air Circulation Operation
(for Cooling Model only)
- When the room temperature reaches the set temperature, operation commences at Low airflow volume. It stops when the room temperature drops to 2°C below the set temperature.
  (It is useful when using a heater).



SETTING THE TIMER

Ensure that the current time is correct before setting the timer. The timer cannot be set if the time display is flashing.

■ ON-TIMER Operation

To start the air conditioner operation automatically.
- Press [1] to set the operation.
- Press [2] to increase or decrease the time.
- Then press [3].
- To cancel this operation, press [4].

■ OFF-TIMER Operation

To stop the air conditioner operation automatically.
- Press [5] to set the operation.
- Press [2] to increase or decrease the time.
- Then press [3].
- To cancel this operation, press [4].

● Timer Mode Operation Details

- When the ON-Timer is set, operation will start before the actual set time. This is to enable the room temperature reaches the set temperature at the set time.

Cooling Model		Heat Pump Model	
COOL,DRY, AUTO	– 15 minutes in advance	COOL,DRY,	– 15 minutes in advance
		HEAT, AUTO	– 30 minutes in advance

- Once the ON-Timer is set, operation will start at the set time everyday.
- The current time is not displayed when the timers are set.
- When both timers are used together, the TIMER mode indicator on the indoor unit remains lit even when the operation is stopped by the OFF-TIMER.

CONVENIENCE OPERATION

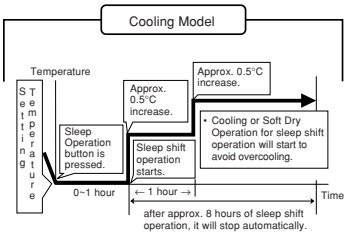
■ Sleep Mode Operation

To obtain a comfortable room temperature while sleeping:-
- Press [6].
- Sleep mode indicator on the indoor unit will light up.
- To cancel this operation, press once more.

● Sleep Mode Operation Details

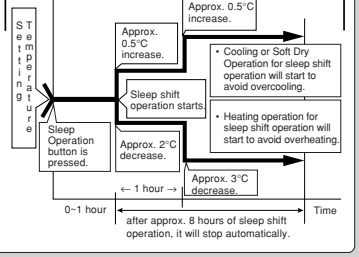
- When the room temperature reaches the set temperature, the airflow volume will change to low automatically.
- Sleep Mode Operation time is 8 hours.
- When used together with the timer, the timer has a priority.

Cooling Model


Temperature
Setting Temperature
Approx. 0.5°C increase.
Approx. 0.5°C increase.
• Cooling or Soft Dry Operation for sleep shift operation will start to avoid overcooling.
Sleep Operation button is pressed.
Sleep shift operation starts.
0~1 hour
← 1 hour →
Time

after approx. 8 hours of sleep shift operation, it will stop automatically.

Heat Pump Model


Temperature
Setting Temperature
Approx. 0.5°C increase.
Approx. 0.5°C increase.
• Cooling or Soft Dry Operation for sleep shift operation will start to avoid overcooling.
Sleep shift operation starts.
• Heating operation for sleep shift operation will start to avoid overheating.
Sleep Operation button is pressed.
Approx. 2°C decrease.
Approx. 3°C decrease.
← 1 hour →
0~1 hour
Time

after approx. 8 hours of sleep shift operation, it will stop automatically.

■ Economy Mode Operation

To save electrical power consumption.
Please use this mode when the room has reached your desired temperature.
- Press [7].

※ Economy mode indicator (green) on the indoor unit will light up.
- Press once more to cancel this operation.

■ Powerful Mode Operation

To obtain the set temperature quickly.
- Press [8].

※ Powerful mode indicator (orange) on the indoor unit will light up.
※ Powerful mode will operate for 15 minutes only.
- To cancel this operation, press once more.

● Economy / Powerful Mode Operation Details

- Economy and Powerful operation cannot be selected simultaneously.
- The changes of the temperature and airflow volume are automatic.
- The remote control display remains unchanged.
- If sleep button or operation mode button is pressed, economy or powerful operation will be cancelled.
- During **FAN** – Air circulation operation, the powerful and economy operation are not available. (cooling model only)

Economy Mode Operation	Temperature	Airflow volume
COOL / DRY	0.5°C higher than set temp.	Super Low
HEAT (for Heat Pump model only)	0.5°C lower than set temp.	Automatic

Powerful Mode Operation	Temperature	Airflow volume
COOL / DRY	3°C lower than set temp.	Super High
HEAT (for Heat Pump model only)	3°C higher than set temp.	Automatic

CARE AND MAINTENANCE

■ Cleaning the Indoor Unit and Remote Control

- Wipe gently with a soft, dry cloth.
- Do not use water hotter than 40˚C or polishing fluid to clean the unit.

■ Cleaning the Air Filter

(Recommendation:- If the unit is operated in a dusty environment, clean the filters every two weeks, continuous use of this dirty filters will reduce cooling or heating efficiency)

1 Remove dirt using a vacuum cleaner.

2 Wash back of the air filter with water.

3 If badly soiled, wash it with soap or a mild household detergent.

4 Let it dry and reinstall it.
Be sure the "FRONT" mark is facing you.
※ Damaged air filter.
Consult the nearest authorized dealer.
Part No.: CWD001047.
- Do not use benzene, thinner, scouring powder or clothes soaked in caustic chemical to clean the unit.

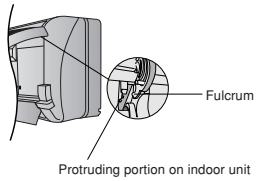
■ Cleaning the Front Panel

(Must be removed before washing)

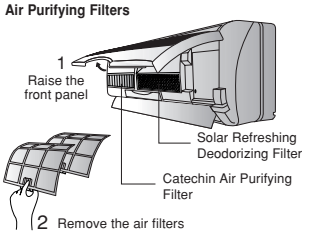
1 Raise the front panel higher than the horizontal and pull to remove it.

2 Gently wash with water and a sponge.
- Do not press the front panel too hard when washing.
- When use kitchen cleaning fluid (neutral detergent), rinse throughly.
- Do not dry the front panel under direct sunlight.

3 To fix the front panel, raise the front panel horizontally, match the protruding portion on the indoor unit to the fulcrum and push into place.



■ Air Purifying Filters



● **Solar Refreshing Deodorizing Filter**
- Used to remove unpleasant odour and deodorize the air in the room.
- Reusable.
- Vacuum, place under direct sunlight for 6 hours and fit it back in place.
(Recommended: every 6 months)

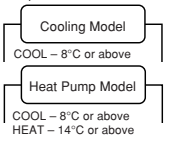
● **Catechin Air Purifying Filter**
- The filter is coated with catechin to prevent growth of bacteria and viruses.
- Reusable.
- Vacuum and fit it back in place
(Recommended: every 6 months)

- Recommended to change these filters every 3 years. Do not reuse damaged filters.
Consult the nearest authorized dealer to purchase a new filter.
Catechin Air Purifying Filter No.: CZ-SF70P
Solar Refreshing Deodorizing Filter No.: CZ-SFD70P

- If you operate the air conditioner with dirty filters:-
– Air is not purified
– Cooling capacity decreases
– Foul odour is emitted

■ Pre-season Inspection

● **Is the discharged air cold/warm?**
Operation is normal if 15 minutes after the start of operation, the difference between the air intake and outlet vents temperature is:-

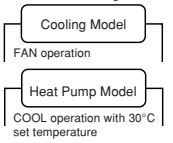


● **Are the air intake or outlet vents of the indoor or outdoor units obstructed?**

● **Are the remote control batteries weak?**
If the remote control display appears weak, replace the batteries.

■ When the Air Conditioner is Not Used for an Extended Period of Time

1 To dry the internal parts of the indoor unit, operate the unit for 2 - 3 hours using:-



2 Turn off the power supply and unplug.
Note: If the unit is not switched off by the remote control, it will start operating when you plug in (because the unit is equipped with Auto Restart Control).

3 Remove the remote control batteries.

■ Recommended Inspection

- After used over several seasons, the unit will become dirty and thus decreases the unit's performance. Depending on the operation conditions, a dirty unit may produce odour and dust may pollute dehumidification system. Therefore, a seasonal inspection is recommended in addition to regular cleaning. (Consult an authorized dealer).

HELPFUL INFORMATION

■ Auto Operation Button

• Raise the front panel and press

● **Automatic Operation**
- If the remote control fails to function or has been misplaced, press the Auto Operation button to start the Automatic operation.
- The Automatic operation will be activated immediately once the Auto operation button is pressed. However, temperature cannot be adjusted in this operation.
- The power indicator on the indoor unit will blink until the operation mode is selected automatically.
- To cancel this operation, press once more.

● **Remote Control Signal Receiving Sound**
- To switch off the beep (Signal Receiving Sound), press the Auto Operation button for 10 seconds continuously or longer.
"Beep", "beep" sound will be heard at the tenth seconds.
Note: "Beep" sound will be heard at the fifth seconds;
However please press continuously until you heard "beep", "beep" sound.
- Repeat the above steps if you want to switch on the Signal Receiving Sound.

● **(This is for Servicing purposes only)**
Note: If you press this button continuously for 5 to 10 seconds, Test Run operation will be performed.
A "beep" sound will be heard at the fifth seconds indicating the Test Run starts to operate.

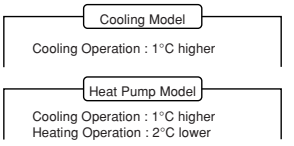
■ Auto Restart Control
- If power is resumed after a power failure, the operation will restart automatically after 3 - 5 1/2 minutes.
- Operation will be restarted automatically under the previous operation mode and airflow direction when power is resumed as the operation is not stopped by the remote control.

■ Timer Setting
- When power failure occurs, the timer setting will be cancelled. Once power is resumed, reset the timer.

■ Thunder and Lightning
- This air conditioner is equipped with a built-in surge protective device. However, in order to further protect your air conditioner from being damaged by abnormally strong lightning activity, you may switch off the main power supply and unplug from power socket.

ENERGY SAVING AND OPERATION HINTS

■ Setting the Temperature
- Approximately 10% of electricity can be saved.
- Set the temperature higher or lower than the desired temperature.



■ Air Filters and Air Purifying Filters
- Clean the air filters every 2 weeks and the Air Purifying Filters every 6 months.
- Dirty filters may reduces cooling or heating efficiency.

■ Keep All Doors and Windows Closed
- Otherwise, cooling or heating performance will be reduced and electricity cost is wasted.

■ Outdoor Unit
- Do not block the air outlet vents. Otherwise, it will lower the cooling or heating performance.

■ Timer and Sleep Mode
- To prevent wastage of electricity, use sleep mode when sleeping or Timer when going out.

■ Avoid Direct Sunlight
- Keep curtains or drapes closed to avoid direct sunlight during cooling operation.

TROUBLESHOOTING

■ Normal Operation

Is it okay?	This is the answer
• Air conditioner has been restarted, but does not operate for 3 minutes.	• This is to protect the air conditioner. Wait until the air conditioner begins to operate.
• A sound like water flowing can be heard.	• This is the sound of refrigerant flowing inside the air conditioner.
• It seems that fog is coming out from the air conditioner.	• Condensation occurs when the airflow from the air conditioner cools the room.
• The room has a peculiar odour.	• This may be a damp smell emitted by the wall, carpet, furniture or clothing in the room.
• During Automatic Vertical Airflow setting, indoor fan stops occasionally.	• This is to remove smell emitted by the surroundings.
• The outdoor unit emits water or steam.	• In COOL/DRY operation, moisture in the air condenses into water on the cool surface of outdoor unit piping that causes dripping.
• (For Heat Pump Model only) Operation stops for about 12 minutes during heating (The power indicator blinks).	• This is to melt the frost which has accumulated on the outdoor unit (defrosting operating). This will take no longer than about 12 minutes. Water drips from the outdoor unit. Wait until this operation ends. (the power indicator will light up). (Frost will accumulates on the outdoor unit when the outdoor temperature is low and humidity is high.)
• (For Heat Pump Model only) During heating operation, indoor fan may run at on and off conditions.	• This is to prevent undesired cooling effect during heating operation.

■ Abnormal Operation

Is it okay?	Please check
• **The air conditioner does not operate.**	• Has the circuit breaker been tripped? • Has the power plug been removed from the wall outlet? • Is the timer being used correctly?
• **Air conditioner produces loud noise during operation.**	• Is the installation work slanted? • Is the front grille closed properly?
• **The air conditioner does not cool or warm effectively.**	• Has the temperature been set incorrectly? • Are the filters dirty? • Are the intake or outlet vents of the outdoor unit obstructed? • Are all windows and doors closed?

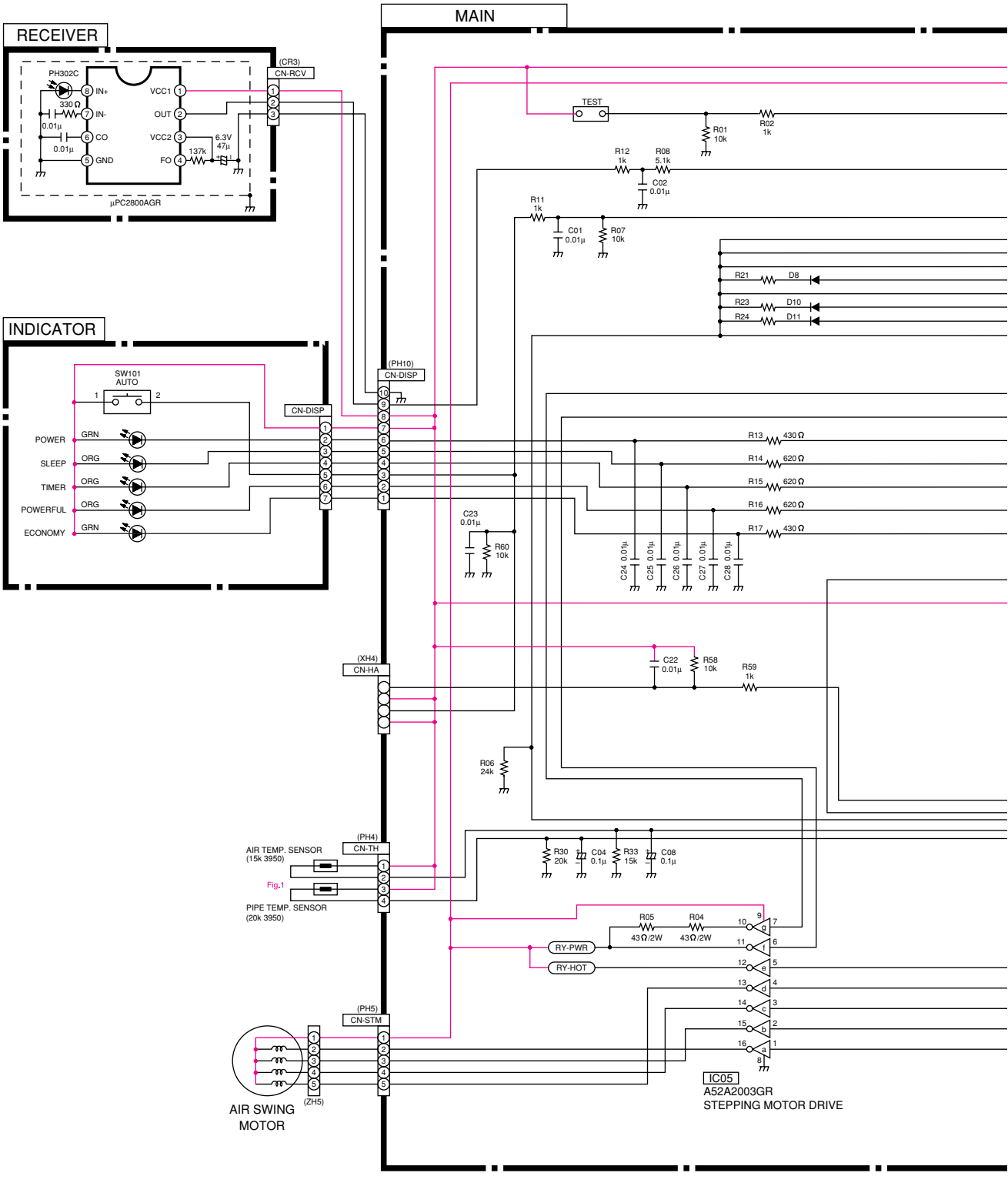
■ Call the Dealer Immediately

If the following conditions occur, turn off and unplug the main power supply, and then call the dealer immediately.

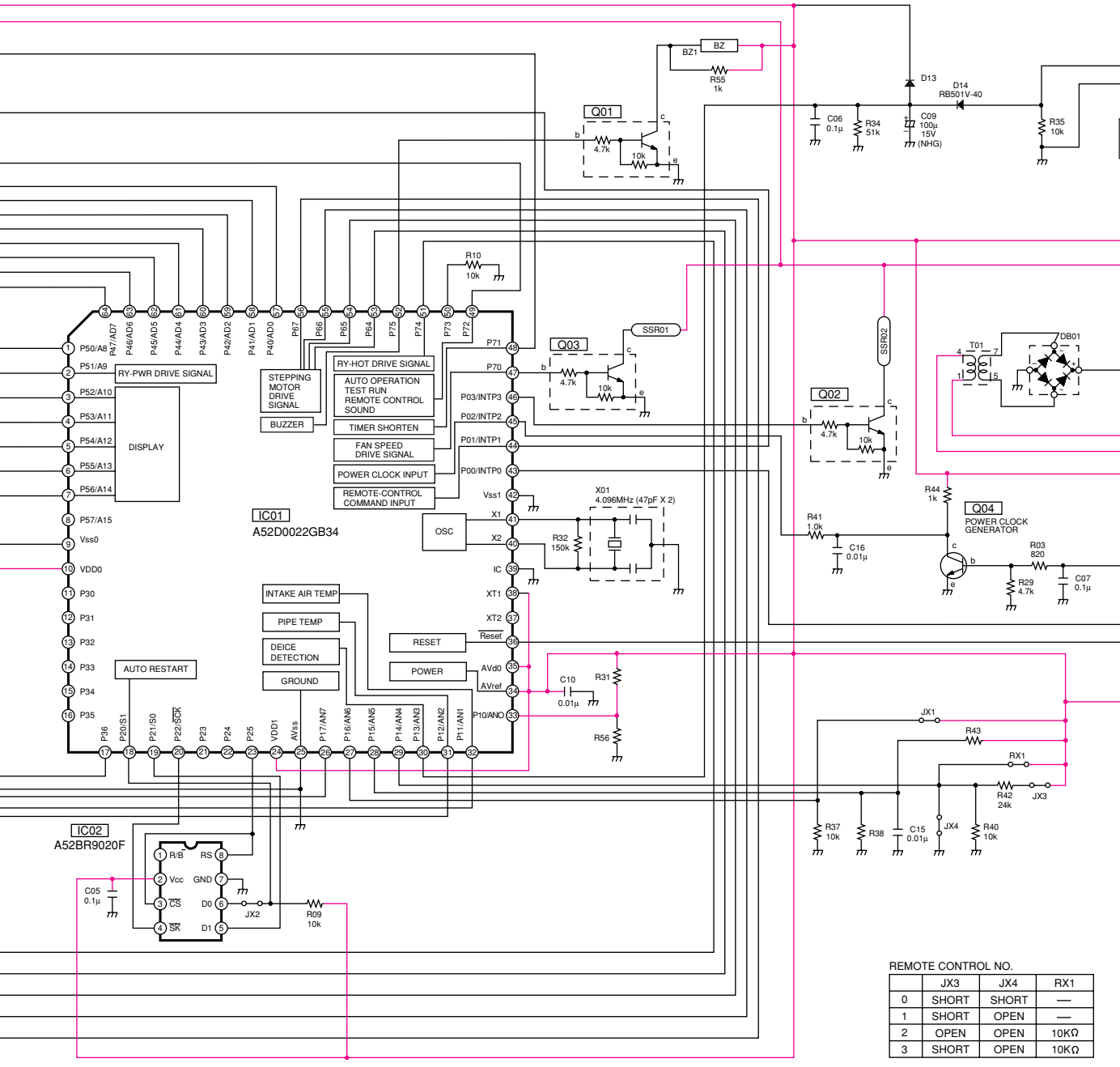
- **Abnormal noise is heard during operation.**
- **Water or foreign material gets into the remote control by mistake.**
- **Water leak from the indoor unit.**
- **Switches or buttons do not operate properly.**
- **The circuit breaker switches off frequently.**
- **Power supply cord and plug become unusually warm.**

- **CS-A7BK / CU-A7BK**
- **CS-A9BK / CU-A9BK**
- **CS-A12BK / CU-A12BK**

SCHEMATIC DIAGRAM 1/3



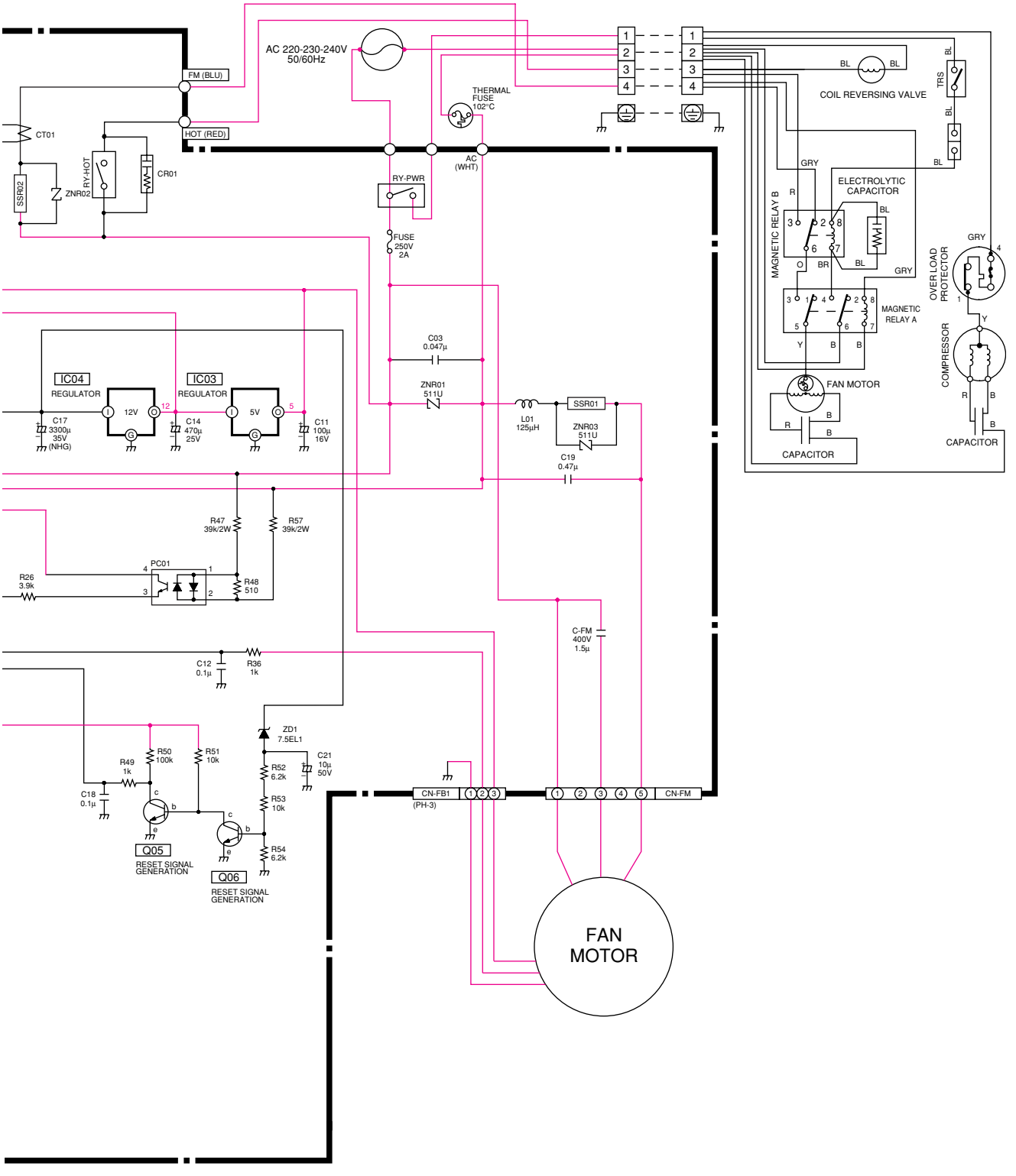
SCHEMATIC DIAGRAM 2/3



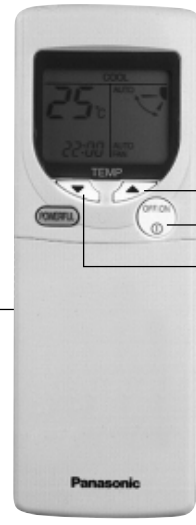
REMOTE CONTROL NO.

	JX3	JX4	RX1
0	SHORT	SHORT	—
1	SHORT	OPEN	—
2	OPEN	OPEN	10KΩ
3	SHORT	OPEN	10KΩ

SCHEMATIC DIAGRAM 3/3



Remote Control



Self illuminating button

OFF / ON ⏻

Operation OFF / ON

MODE

Operation Mode Selection

- AUTO Automatic Operation Mode
- HEAT Heating Operation Mode
- COOL Cooling Operation Mode
- DRY Soft Dry Operation Mode

FAN SPEED

Indoor Fan Speed Selection

- FAN ■ Low Fan Speed
- FAN ■■■ Medium Fan Speed
- FAN ■■■■■ High Fan Speed
- AUTO FAN Automatic Fan Speed

AIR SWING

Vertical Airflow Direction Control

- AUTO Automatic Vertical Airflow Direction Control
- MANUAL Vertical Airflow Direction Manual Control (5 stages of adjustment)

POWERFUL

Powerful Mode Operation OFF/ON

ECONOMY

Economy Mode Operation OFF/ON

TEMP.

Room Temperature Setting

Heating, Cooling, Soft Dry Operation.

- Temperature Setting (16°C to 30°C)

Automatic Operation

- Hi Operation with 2°C higher than standard temperature.
- Operation with standard temperature.
- Lo Operation with 2°C lower than standard temperature.

ON-TIMER
OFF-TIMER

Timer Operation Selection

- 24-hour, OFF / ON Real Timer Setting.

TIME

Time / Timer Setting

- Hours and minutes setting.

SET
CANCEL

Timer Operation Set / Cancel

- ON Timer and OFF Timer setting and cancellation.

CLOCK

Clock Setting

- Current time setting.

SLEEP

Sleep Mode Operation OFF / ON

Indoor Unit

AUTO
OFF / ON

Automatic Operation Button

- Press for < 5s to operate Automatic operation mode.
  (Used when the remote control cannot be used.)
- Press continuously for 5s or < 10s to operate Test Run/Pump down. “Beep” sound will be heard at the 5th second.
  (Used when test running or servicing.)
- Press continuously for 10s and above to omit or resume the remote control signal receiving sound. “Beep, beep” sound will be heard at the 10th second.

Operation Indication Lamps (LED)

- POWER (Green) ..... Lights up in operation, blinks in Automatic Operation Mode judging.
- SLEEP (Orange) ..... Lights up in Sleep Mode Operation.
- TIMER (Orange) ..... Lights up in Timer Setting.
- POWERFUL (Orange) ... Lights up in Powerful Mode Operation.
- ECONOMY (Green) ..... Lights up in Economy Mode Operation.

Operation Mode

- Heating, Cooling, Soft Dry and Automatic Mode.

Powerful Operation

- Reaches the desired room temperature quickly.

Economy Operation

- To reduce electrical power consumption.

Random Auto Restart Control

- Operation is restarted randomly after power failure at previous setting mode.

Anti-Freezing Control

- Anti-Freezing control for indoor heat exchanger. (Cooling and Soft Dry)

Sleep Mode Auto Control

- Indoor Fan operates at Low speed.
- Operation stops after 8 hours.

Indoor Fan Speed Control

- High, Medium and Low.
- Automatic Fan Speed Mode
  - Heating : Fan speed varies from Me → SSLo in accordance with indoor heat exchanger.
  - Cooling : Fan rotates at Hi, Me and SLo speed. Deodorizing control is available.
  - Soft Dry : Fan rotates at SLo speed. Deodorizing control is available.

Airflow Direction Control

- Automatic air swing and manual adjusted by remote control for vertical airflow.
- Manually adjusted by hand for horizontal airflow.

Starting Current Control

- Fan motor is delayed for 1.6 seconds when compressor starts simultaneously.

Time Delay Safety Control

- Restarting is inhibited for appro. 3 minutes.

7 Minutes Time Save Control

- Cooling Operation only.

Anti-Dew Formation Control

- Anti-Dew Formation Control for indoor unit discharge area.

30 Minutes Time Save Control

- Heating Operation only.

Hot-Start Control

- At Heating Operation the indoor fan will operate at SLo speed when indoor heat exchanger temperature reaches 30°C.

Anti Cold Draft Control

- The indoor fan operates at SSLo when the indoor heat exchanger temperature is low. (During Heating mode thermal off)

Outdoor Unit

Compressor Reverse Rotation Protection Control

- To protect compressor from reverse rotation when there is a instantaneous power failure.

Overload Protector

- 2-Stage OLP to protect the compressor. Overload Protector will trip when
  – Temperature of compressor increases to 120°C.
  – High temperature or high current flows to compressor.
  (Refer circuit diagram for OLP characteristic)

60 Secs. Forced Operation Control

- Once the compressor is activated, it does not stop within the first 60 secs. However, it stops immediately with remote control stop signal.

Outdoor Fan Operation Control

- Temperature Fuse.

Deice Control

- To prevent frosting at outdoor heat exchanger. (Only for Heating Operation)
- Temperature of outdoor heat exchanger is sensed by TRS (Thermal Reed Switch).
  TRS OFF temperature 4°C.
  TRS ON temperature -3°C.

Overload Protection Control

- Outdoor fan stops when indoor heat exchanger temperature rises to 51°C and above, and restarts when the indoor heat exchanger temperature drops to 49°C and below.
- Compressor stop when indoor heat exchanger temperature reaches 65°C or above. (Heating Operation Only)

Compressor Protection Control

- If the outdoor fan motor is not running after compressor starts for 50 secs., compressor will stop. (Cooling and Soft Dry Operation only).

4-Way Valve Control

- When the unit is switched to “OFF” during Heating Operation, 4-way valve stays at Heating position for 5 minutes.